

INDUSTRIAL PRODUCTS

WEIGHTS
MONEL-NICKEL

FOUNDRY DATA
WELDING

STOCK
LIST
AND
METAL
MANUAL



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A Corporate Division of Metal Goods Corporation

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ORDERS: It is of utmost importance that exact specifications be given in every order. Feet, inches, pounds, ounces, pieces, gauges, finish, length, width, tempers, etc., should be carefully included. The large variety of alloys, tempers, anneals and finishes make it essential, on initial orders particularly, that information be given as to the use for which the material is intended. This will aid considerably in the proper fulfillment of your requirement.

GAUGES: The use of the Micrometer to determine the thickness of metal or the size of wire in decimal parts of an inch, and the abolition of all gauge numbers when ordering, is strongly recommended. A comparison of gauges and decimal equivalents is included in the Data Section of this book.

DIAMETER MEASUREMENTS: When ordering Seamless Tubes, state whether the diameter given is "inside" or "outside", otherwise it will be considered that outside measurements are specified.

ESTIMATING PRICES: Prices of most metals in their various forms are usually determined by means of a base price applying only to certain gauges and widths and to which must be added extra charges for variations from these sizes and quantity extras. All orders are subject to minimum charges if applicable.

CONFIRMATION ORDERS: Confirmation orders should be plainly marked on the face of the order "Confirmation" in large letters. Unless so marked, confirmation orders may be treated as originals and filled in duplicate. In such cases we will not be responsible for the expense and inconvenience involved.

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TELEPHONE SERVICE: A well-trained staff of men at each office is always at hand to help you either by telephone or personal call. These men are thoroughly experienced in manufacturing and maintenance problems. Though you have no immediate order, do not hesitate to bring your problem to them.

DELIVERIES: As a rule material from our warehouses is shipped the same day the order is received.

Telephone orders are accepted at the risk of the customer and shipments made before the receipt of confirmation are for the special convenience of the customer.

Promises of delivery on special orders are estimated as carefully as possible and although we do our best to ship within the time mentioned, we cannot guarantee to do so.

WEIGHTS: The weights given in this book are theoretical and variations must be expected in practice.

SIZES: Stock sizes change from time to time, and if the one you desire is not listed get in touch with us.

TERMS AND CONDITIONS OF SALE

All orders are accepted subject to prior sale and subject to our sales and credit terms and conditions only, and not to the terms and conditions appearing on Buyer's purchase order or contract. Your agreement with our terms and conditions shall be conclusively evidenced by your acceptance of any shipment.

Said terms and conditions are as follows:

PRICES: All price quotations made by us or our agents are subject to change without notice. Prices in effect on date of shipment will prevail unless otherwise agreed to by us in writing. Prices quoted are F.O.B. our warehouse except when delivery is made by us within the free delivery areas which may be designated from time to time by our warehouses (or as otherwise specified). Appropriate charges will be made for packaging small or broken case shipments. Shipments made without packaging at the request of the Buyer shall be at the risk of the Buyer. If partial shipments are made at request of Buyer, boxing charges and quantity extras will be charged if applicable.

COMMODITIES: All orders (or contracts) are accepted with the understanding they are subject to our ability to obtain the necessary commodities, and all orders (or contracts) as well as shipments applicable to such orders (or contracts), are subject to our current delivery schedules and to any Government Regulations that may be applicable.

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TAXES: Prices indicated, unless otherwise agreed in writing, are exclusive of any present or future Federal, State, County or Municipal or other sales, use or excise tax upon or measured by the receipts from the sale or by the value of the material sold. Such taxes, if paid or required to be paid by us, shall be added to and become part of the price payable by the Buyer hereunder.

TERMS OF PAYMENT: If credit is approved by us, terms of payment are net cash 30 days, unless a discount for prompt payment applies. Prompt payment discounts vary with different commodities according to industry practice, and shall be such, if any, as are shown on the invoice covering the commodities sold. Such discounts shall apply to invoices dated the 1st to the 15th inclusive, if paid on or before the 25th of the month; to invoices dated the 16th to and including the last day of the month, if paid on or before the 10th of the following month. Invoices will be dated not earlier than the day of shipment.

On accounts not paid within 30 days from the end of the month in which invoices are rendered, interest will be charged at the rate of 6% per annum. Terms on tools, fixtures and fitting-up charges are net cash.

DELAY IN DELIVERY: We will endeavor to ship material within specified time, but this is not guaranteed. We will not be liable for any delay in the performance of orders or contracts, or in the delivery or shipment of goods, or for non-delivery, or for any damages suffered by Buyer by reason of such delay or non-delivery, when same is, directly or indirectly, caused by, or in any manner arises from fires, floods, accidents, riots, acts of God, war, governmental interference or embargoes, strikes, labor difficulties, shortage of labor, fuel, power, materials or supplies, transportation delays, or any other cause or causes (whether or not similar in nature to any of these hereinbefore specified) beyond our control. In no event shall we be liable for special or consequential damages.

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WARRANTY. Should any of the material sold by us prove defective or below standard, Buyer shall not return the goods, but shall cease its use and shall notify us, stating full particulars in support of his claim, and we will either replace goods upon return of the defective or below standard material or adjust the matter fairly and promptly, but under no circumstances shall we be obligated for consequential or other damages, labor, losses or expenses in connection with or by reason of the use of or inability to use materials purchased for any purpose. The advice of our staff is available to the trade, but we, not controlling or supervising the subsequent manufacture, fabrication or installation of our products or their use after sale, do not warrant or guarantee such advice. No warranty or guarantee as to materials or fitness thereof for any purpose is made unless the same is specifically set forth in contract of purchase or acknowledgment of order, but in such case such warranty or guarantee is limited as above provided.

Materials furnished by us are subject to standard commercial tolerances unless otherwise provided hereon.

Any claim that material fails to conform to specifications or is defective shall be deemed waived by Buyer unless made in writing within 60 days from the date of shipment of the material to which such claim relates.

PATENT INFRINGEMENT: If any materials shall be sold by us to meet Buyer's particular specifications or requirements and are not part of our standard line offered by us to the trade generally in the usual course of our business, Buyer agrees to defend, protect and save us harmless against all suits at law or in equity and from all damage, claims and demands for actual or alleged infringement of any United States or foreign patent, and to defend any suit or actions which may be brought against us for any alleged infringement because of the sale of the material ordered by Buyer.

CANCELLATIONS AND RETURNS: Any request by Buyer for cancellation or alteration of an order, to be binding upon us, must be accepted by us in writing, and, at our option, will be subject to fair charges for expenses incurred and work executed by us or our suppliers up to the time of acceptance by us of such request.

Delivered materials returned to us will be accepted only if our prior written consent has been secured. Handling, inspection, restocking and invoicing charges will be assessed if applicable, with a minimum charge of

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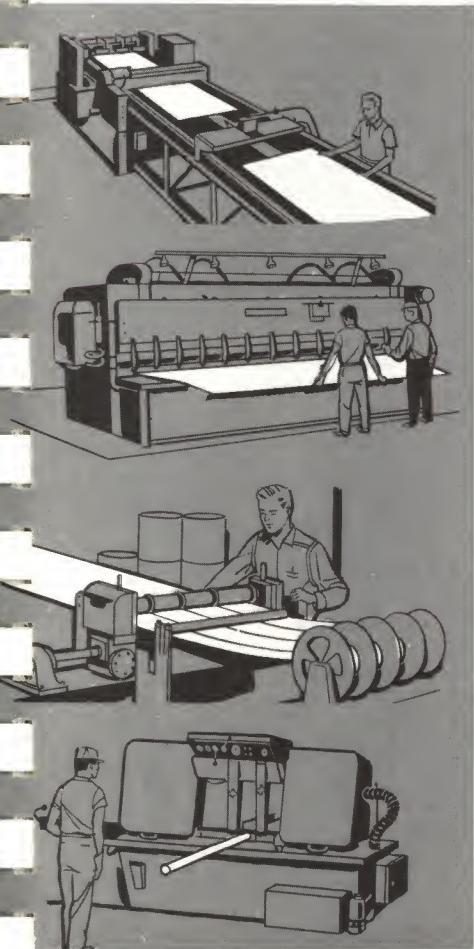
\$2.50 plus any outgoing packing and freight expenditures paid by us. All returns allowed must be shipped to us prepaid and must be in excellent resale condition. Materials cut to Buyer's specifications are not returnable. No modification of or addition to or waiver of any of the above terms and conditions shall be effective unless agreed to in writing by an authorized officer of seller.

DELIVERY: Except when delivery is made by us within our free delivery areas, or unless we otherwise specify, delivery will be made F.O.B. our warehouse, and title and risk of loss shall pass to Buyer at that point. We reserve the right to select means and route of shipment of order when specific instructions are not included in the order.

FOUNDRY PRODUCTS: Unless otherwise agreed in writing between Buyer and Seller, the results of pressure tests, X-ray examinations, fluorescent penetrant examinations or other comparable inspection procedures, and variance of material from blueprints if such material has been made from pattern or core box equipment supplied by Buyer, shall not constitute a basis for rejection of material by Buyer. All costs of transportation, repair, alteration and packing of Buyer's equipment necessary for production of material will be paid by Buyer. Seller shall not be responsible for loss or damage to Buyer's pattern or core box equipment if caused directly or indirectly by acts of God, wars, fires, floods, civil or labor commotions, or any cause reasonably beyond Seller's control.

WELDING MATERIALS: The stability of the flux covering will vary, depending on storage conditions. The fumes from the burning coverings of electrodes may be injurious to personnel when such electrodes are used in inadequately ventilated spaces. Seller will not be liable for damages or injuries directly or indirectly caused by fumes resulting from the use of electrodes.

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Need metals in special sizes to meet the exact size requirements of your application? Then take advantage of our roller-leveling, shearing, slitting, and cutting services. All are done on modern, efficient equipment. These services, in many cases, eliminate all or most of your scrap losses. It will pay you to investigate the next time you have a problem involving special sizes.

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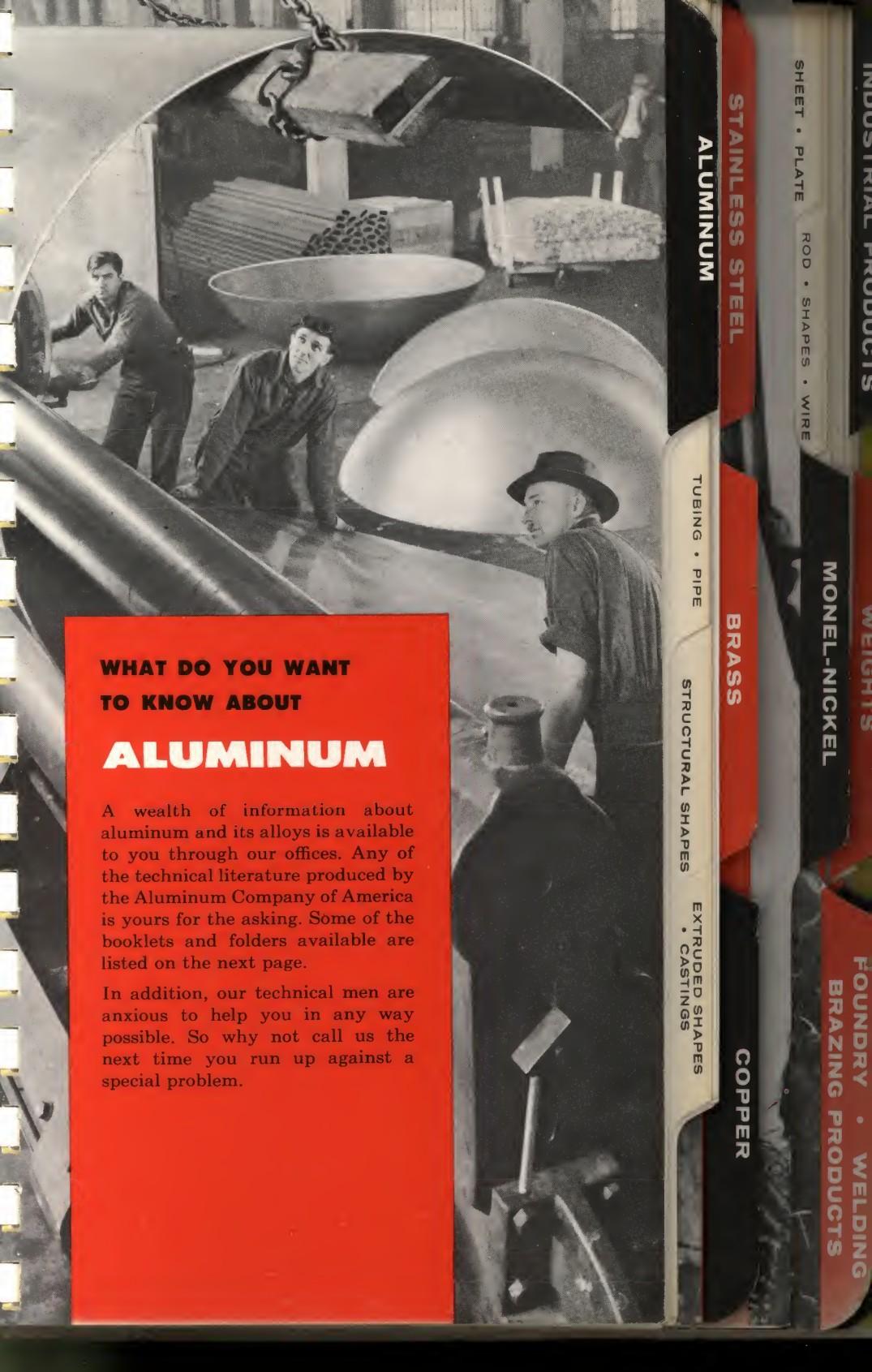
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WHAT DO YOU WANT TO KNOW ABOUT **ALUMINUM**

A wealth of information about aluminum and its alloys is available to you through our offices. Any of the technical literature produced by the Aluminum Company of America is yours for the asking. Some of the booklets and folders available are listed on the next page.

In addition, our technical men are anxious to help you in any way possible. So why not call us the next time you run up against a special problem.



ALUMINUM

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ALUMINUM

Stocks change from time to time. If the material you want is not listed here, call or write our office nearest you for additional information.

LITERATURE ON ALUMINUM

Here are a few of the booklets published by the Aluminum Company of America that are available to you. This literature is free, and may be obtained by calling or writing our office nearest you.

Aluminum Handbook
Forming Aluminum
Machining Aluminum
Brazing Aluminum
Welding Aluminum
Riveting Aluminum
Aluminum in Automatic Screw Machines
Aluminum Bus Bar
Aluminum Bus Conductor Handbook
Structural Handbook
Aluminum in Architecture
Roofing and Siding Products
Finishes For Aluminum
Pipe and Fittings
Truck Bodies
Process Industries Applications
Alloys and Mill Products

DATA AND WEIGHTS

Tables showing physical and chemical properties, weights, and other useful information on aluminum are shown in the Data and Weights sections of this catalog. Call our nearest warehouse sales office on special problems.

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• CASTINGS**STAINLESS STEEL****BRASS****COPPER**

ROD • SHAPES • WIRE

ALUMINUM ASSOCIATION ALLOY DESIGNATION SYSTEM

**FOR ALCOA WROUGHT ALUMINUM****4 DIGIT SYSTEM****1st Digit**

Identifies alloy types.

2nd Digit

Identifies alloy modification. Digit replaces letters formerly used. For example, A17S becomes 2117.

3rd & 4th Digits

Identify the aluminum purity or the specific aluminum alloy. The digits are the same as the numbers in the old designation for alloys in use prior to the adoption of the four digit system. For example, 24S becomes 2024.

ALLOY GROUPS**Type of Aluminum Alloy****1XXX**

Aluminum — 99.00% minimum and greater

2XXX

Copper

3XXX

Manganese

4XXX

Silicon

5XXX

Magnesium

6XXX

Magnesium and Silicon

7XXX

Zinc

8XXX

Other Element

9XXX

Unused series

Experimental

Letter "X" precedes four digits. For example, X8280.

Temper

Temper designation follows alloy designation. They are separated by a dash. It employs the letters "O" or "F", "H" or "T" followed by one or more numbers. For example, 1100-0, 5052-H34, 6061-T651, 3003-F.

NEW TEMPER DESIGNATIONS FOR STRESS RELIEVED ALUMINUM ALLOYS

ALUMINUM

M
M
S
C

**YOU
SERV**

**YOUR
METAL**

NEW YORK
Worth 4
P. O. Bo

CARTEI
P. O. Bo
Milik St
YOrktow
Dir. Dist
TWX-20

HARRIS
1000 South
Humboldt
Dir. Dist.
TWX-20

CAMBR
281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

For most alloys, the new temper designation system utilizes three digits after the letter "T". The first digit indicates the basic temper. The second digit "5" means the material has received stress relief treatment. The third digit indicates the method used to effect stress relief — numeral "1" denotes stretching, numeral "2" denotes compression; numerals "3" through "9" are reserved for describing other methods of stress relief, if such methods are developed.

These new temper designations have been incorporated in the METALOG covering those alloys affected by the change. They are as follows:

PLATE

Old Designation	New Designation
2024-T4	2024-T351
2024-T4 Alclad	2024-T351 Alclad
6061-T6	6061-T651
7075-T6	7075-T651
7075-T6 Alclad	7075-T651 Alclad
7178-T6	7178-T651
7178-T6 Alclad	7178-T651 Alclad

WIRE, ROD, BAR, STRUCTURALS

Old Designation	New Designation	Rounds-Diameter
2017-T4	2017-T451	$\frac{1}{2}'' - 6\frac{3}{4}''$
2024-T4	2024-T351	$\frac{1}{2}'' - 6\frac{1}{4}''$
6061-T6	6061-T651	$\frac{1}{2}'' - 8''$
7075-T6	7075-T651	$\frac{1}{2}'' - 6\frac{1}{4}''$

The temper designations above apply also to the alloys of square, rectangular, and hexagon shaped stocks measuring one-half inch minimum across flats, thickness, or width. The maximum limit for these shapes is larger than any of the material stocked by Whitehead Metals, Inc.



MONEL-NICKEL

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SHEET • PLATE

ALUMINUM
SHEET AND PLATE
WEIGHT TABLEPounds Per
Square Foot

B. & S. Gauge Number	Thickness (in inches)	Approx. Wt. Per Sq. Ft.-	
		Sheet	Plate
-	.190	2.68	-
-	.188	2.65	-
-	*.160	2.26	-
-	.156	2.21	-
-	*.125	1.76	-
10	.102	1.44	-
-	*.100	1.41	-
11	.091	1.28	-
-	*.090	1.27	-
12	.081	1.14	-
-	*.080	1.13	-
13	.072	1.04	-
-	*.071	1.00	-
14	.064	.904	-
-	*.063	.889	-
16	.051	.720	-
-	*.050	.706	-
18	*.040	.565	-
20	*.032	.452	-
22	*.025	.353	-
24	*.020	.282	-
-	.019	.268	-
26	*.016	.226	-
28	.012	.178	-
30	.010	.141	-
32	.008	.113	-
34	.006	.089	-
-	3.000	-	42.33
-	2.500	-	35.28
-	2.000	-	28.22
-	1.750	-	24.69
-	1.500	-	21.17
-	1.250	-	17.64
-	1.000	-	14.11
-	.875	-	12.35
-	.750	-	10.58
-	.625	-	8.82
-	.500	-	7.06
-	.375	-	5.29
-	.313	-	4.41
-	.250	-	3.53

*American Standard Preferred Thickness.

NOTE

Above figures are based on 1100 (5005, 5357 and 6061) alloys.
 For weights of other alloys multiply by the following factors:
 3003—1.01, 2024—1.02, 5050—.99,
 5052—0.99, 7075—1.03, 7178—1.04.

ALCOA ALUMINUM WROUGHT ALLOYS SELECTOR CHART

Alcoa Alloy	General Characteristics	Typical Uses
1100	Excellent forming qualities, resistance to corrosion, weldability, electrical conductivity.	Chemical equipment, tank cars, heat exchangers, storage tanks, sheet metal work, dials and name plates, cooking utensils, decorative parts, giftware, and reflectors. 1100-0 wire stock is often used as general purpose welding wire and where the assembly is Alumilite treated.
32 Alumilite	Excellent Alumilite finishing characteristics. Appearance match with 6063 after Alumilite.	Store fronts, light fixtures, appliance and automotive trim, giftware.
2011	Good machinability, unexcelled for free-cutting qualities, good mechanical properties.	Screw-machine products, machine parts, atomizer and hose parts, pipe stems, cigarette holders, tube fittings.
2017	Relatively high strength, combined with fair workability and good machinability.	Screw machine products, tube fittings, pulleys, gages, coat hangers, crochet and knitting needles.
2024	A high-strength material of adequate workability. Has largely superseded 2017 for structural applications. Use of 2024-0 is not recommended unless subsequently heat treated.	Aircraft parts, truck wheels, caul plates, piano hinges, luggage, scientific instruments, ski poles, fastening devices, veterinary and orthopedic braces and equipment.
Alclad 2024	Combines high strength of 2024 with excellent resistance to corrosion in T3 and T4 temper. Its appearance is good.	Aircraft frames and skins, venetian blind slats, railroad car roofs and sides, truck bodies, caul plates.
3003	Similar characteristics to 1100 but with slightly higher strength, good workability, weldability, resistance to corrosion. Low cost. 3003-H112 Plate: ASME Unfired Pressure Vessel Code Approved.	Ductwork, cooking utensils, ice cube trays, garage doors, awning slats, trailer and truck panels, refrigerator panels, gas lines, gasoline tanks, heat exchangers, pressure vessels, storage tanks, chemical equipment, drawn and spun parts, general sheet metal work.
Alclad 3003	Same as 3S, except has higher resistance to perforation under corrosive conditions.	Heat exchanger tubes, chemical equipment, swimming pools, tea kettles.
5005	Similar characteristics to 3003, but with finer grain structure. Good finishing characteristics.	Same as 3003. Useful where excessive finishing costs are encountered in the use of 3003 alloys due to surface roughness upon drawing.
5050	Intermediate strength, good finishing characteristics. 5050-0 Alcoa Utilube can be used with compression or flare fittings, comparable to annealed copper.	Decorative refrigerator parts, cosmetic cases, general purpose tubing (Alcoa® Utilube), for instrumentation lines, fuel, lubricant and gas lines. 5050 Flat Sheet is a good general-purpose sheet metal alloy where strengths greater than 3003 are required.

ALCOA ALUMINUM WROUGHT ALLOYS SELECTOR CHART

Alcoa Alloy	General Characteristics	Typical Uses
5052	Excellent resistance to corrosion, especially marine environment; good workability, higher strength than 1100 or 3003. Good finishing characteristics. 5052-H112 Plate: ASME Unfired Pressure Vessel Code Approved.	Kitchen cabinets, small boats, home freezers, milk crates, bus and truck bodies, refrigerator trays, aircraft tube, fencing, fan blades, shoe eyelets. Sheet metal parts and home appliances. 5052-H112 Plate is often used in tankage, high temperature vessels.
5154	Excellent strength and ductility for welding alloys 3004, 5052 (and 5154 sheet and plate). Used in the consumable electrode welding process.	Often used where Alumilite finishing is required. For welds of maximum strength and ductility, particularly in thicknesses above $\frac{1}{4}$ ".
5356	A special welding rod for specific uses where strengths greater than 5154 are required.	Consult your Aluminum Man.
5357	A grade of sheet especially suited for Alumilite finishing.	Ornamental trim, giftware.
6061	Combines relatively high strength, good workability and high resistance to corrosion; widely available. 6061-T6 Plate: ASME Unfired Pressure Vessel Code Approved.	Sailboats, canoes, truck and bus bodies, scaffolding, transmission towers, mine skips, furniture, chemical equipment, awnings, marine equipment, fire ladders, moldings, pipe. Uses for 6061-T6 Plate include tankage, tank fittings and flanges. Uses for 6061-T6 Tube and Pipe include general structural and high pressure applications, paper and textile rolls.
6063	High resistance to corrosion. Pleasing natural finish greatly enhanced by the Alumilite process. Adequate strength, low cost.	Irrigation pipe, awning supports, windows, store fronts, architectural trim, storm sash, thresholds, stair rails, general utility pipe.
6262	Good machinability with high-strength. Corrosion resistance and finishing characteristics are better than 2011, 2017, 2024, and equal to 6061.	Fittings and couplings, camera components, nuts and screw machine products where corrosion resistance, finish, strength and machinability are important.
7075	Very high strength and hardness.	Aircraft, keys. Used where higher strengths from 2024 are required.
Alclad 7075	Very high strength, excellent resistance to corrosion in the T6 temper. Used for highly stressed structural parts. The O temper combines formability with high strength after heat treating.	Aircraft. Used where higher strengths than Alclad 2024 are required.

STAINLESS STEEL

WIRE • ROD • BAR

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

BRASS

COPPER

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

Sheet • Plate

Rod • Shapes • Wire

ALUMINUM

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HARRIS
1000 Sou
HUmbol
Dir. Dis
TWX-20

CAMBR
281 Alba
TRowbr
Dir. Dis
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

1100-O COILED SHEET

One Side Bright Mill Finish

Arbor:

.032 and less — 6" I.D.

.040 and heavier — 12" I.D.

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.063	24	1.78	.020	12	.284
.050	24	1.41		18	.426
.040	24	1.138		24	.568
.032	12	.452	.016	12	.225
	18	.678	.012	12	.178
	24	.904	.010	12	.141
.025	12	.357			
	18	.536			
	24	.714			

1100-O COILED SHEET

Mill Finish

Arbor:

.032 and less — 6" I.D.

.040 and heavier — 12" I.D.

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.063	16	1.18
	18	1.33
	24	1.78
050	18	1.06
	24	.141
.040	12	.569
	16	.756
	18	.853
	20	.948
	24	1.138
.032	16	.601
	18	.678
	20	.750
	24	.904
.025	18	.536
	24	.714
.020	18	.426
	24	.568
.016	12	.225
	18	.337
.012	12	.178
	18	.267
.010	12	.141
.008	12	.113

ALUMINUM

3003-H14 COILED SHEET

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.125	36	5.33
	48	7.11
.100	36	4.27
	24	2.29
.080	48	4.57
	24	1.796
.063	36	2.69
	48	3.59
.050	24	1.426
	36	2.14
.040	48	2.85
	12	.574
	24	1.15
	36	1.72
	48	2.29

Mill Finish

Arbor:
16"-20" I.D.

5005-H34 COILED SHEET

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.125	36	5.28
	48	7.04
.100	36	4.23
	48	5.64
.090	36	3.81
	48	5.08
.080	36	3.39
	48	4.52
.063	36	2.67
	48	3.56

Mill Finish

Arbor:
18"-20" I.D.

5052-H32 COILED SHEET

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.063	36	2.64
	48	3.52
.050	36	2.10
	48	2.80
.040	36	1.69
	48	2.25

Mill Finish

Arbor:
18"-20" I.D.

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WIRE • ROD • BAR

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

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ROD • SHAPES • WIRE

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Humbo
Dir. Dis
TWX-20

CAMBR
281 Alb
TRowbr
Dir. Dis
TWX-6

PHILAD
1955 W.
BAldwin
Dir. Dis
TWX-21

5052-H34 COILED SHEET

Mill Finish

Arbor:
18"-20" I.D.

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.063	36	2.64	.032	36	1.341
	48	3.52		48	1.788
.050	36	2.097	.025	36	1.059
	48	2.796	.020	36	.840
.040	36	1.689			
	48	2.252			

3105-H25 COILED SHEET

Arbor: 20" I.D.

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.050	36	2.139	.027	36	1.155
	48	2.852		48	1.540
.040	36	1.710	.024	36	1.026
	48	2.280		48	1.368
.032	36	1.368	.019	36	.813
	48	1.824		48	1.084

1100-O SHEET

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.125	36 X 96	42.34	.040	24 X 72	6.77
.100	36 X 96	33.86		36 X 96	13.55
.090	36 X 96	30.48		48 X 144	27.09
.080	36 X 96	27.09	.032	24 X 72	5.42
.063	24 X 72	10.69		36 X 96	10.84
	36 X 96	21.34	.025	24 X 72	4.23
	48 X 144	42.67	.020	24 X 72	3.39
.050	24 X 72	8.47	.016	24 X 72	2.71
	36 X 96	16.93	.012	24 X 72	2.13
	48 X 144	33.87			

ALUMINUM

1100-H14 SHEET

MILL FINISH

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	36 X 96*	64.35	.040	24 X 72†	6.77
	48 X 144*	128.70		36 X 96	13.55
.125	36 X 96	42.34	.032	36 X 120	17.07
	48 X 144	84.67		48 X 144	27.09
.100	36 X 96	33.86	.025	24 X 72†	5.42
	48 X 144	67.72		36 X 96	10.84
.090	36 X 96	30.48	.020	36 X 120	13.56
	48 X 144	60.96		48 X 144	21.67
.080	36 X 96	27.09	.016	24 X 72†	4.23
	48 X 144	54.19		36 X 96	8.47
.063	24 X 72†	10.69	.012	36 X 120	10.71
	- 36 X 96	21.34		24 X 72†	3.39
	36 X 120	26.67		36 X 96	6.77
.050	48 X 144	42.67	.010	36 X 120	8.52
	24 X 72†	8.47		24 X 72†	2.71
	36 X 96	16.93		36 X 96	5.42
	36 X 120	21.18		24 X 72†	2.13
	48 X 144	33.87		24 X 72†	1.73

*H24 Temper, halfhard obtained by strain hardening and partial annealing.

† Also available in Bright Finish, Interleaved

1100-H25 SHEET

Standard
One Side Bright
Mill Finish, Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.050	36 X 96	16.93	.025	36 X 96	8.47
.040	36 X 96	13.55	.020	36 X 96	6.77
.032	36 X 96	10.84	.016	36 X 96	5.42

1100-F PLATE

MILL FINISH, MILL SHEARED EDGE

Thickness (in inches)	Size (in inches)	Pounds Per Plate	Thickness (in inches)	Size (in inches)	Pounds Per Plate
1	36 X 96	338.68	.375	48 X 144	254.00
.750	36 X 96	254.00	.313	36 X 96	166.00
.500	36 X 96	169.34	.250	36 X 96	84.67
	48 X 144	338.64		48 X 144	169.34
.375	36 X 96	127.00		60 X 144	211.80

MONEL-NICKEL

FOUNDRY • WELDING
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SHEET • PLATE

ROD • SHAPES • WIRE

STAINLESS STEEL

WIRE • ROD • BAR

TUBING • PIPE

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Dir. Dist
TWX-20

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281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

3003-O SHEET

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.125	36 X 96	42.76	.050	36 X 96	17.11
	48 X 144	85.54		48 X 144	34.21
.090	36 X 96	30.79	.040	36 X 96	13.68
	48 X 144	61.59		48 X 144	27.37
.080	36 X 96	27.37	.032	36 X 96	10.95
	48 X 144	54.74	.025	24 X 72	4.28
.063	36 X 96	21.55		36 X 96	8.55
.063	48 X 144	43.11	.020	36 X 96	6.84

3003-H14 SHEET

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	36 X 96*	65.00	.050	36 X 120	21.38
	48 X 120*	108.40		48 X 96	22.82
	48 X 144*	130.00		48 X 120	28.51
.125	36 X 96	42.76		48 X 144	34.21
	36 X 120	53.40		60 X 144	42.77
	48 X 120	71.20	.040	36 X 96	13.68
	48 X 144†	85.54		36 X 120	17.11
	60 X 144	106.80		48 X 96	18.40
.100	36 X 96	34.08		48 X 120	22.81
	48 X 144	68.16		48 X 144	27.37
.090	36 X 96	30.79		60 X 144	34.21
	48 X 120	51.48	.032	36 X 96	10.95
	48 X 144	61.59		36 X 120	13.69
0.80	36 X 96	27.37		48 X 96	14.59
	48 X 120	46.00		48 X 120	18.25
	48 X 144	54.74		48 X 144	21.90
	60 X 144	68.31	.025	36 X 96	8.55
.063	36 X 96	21.55		36 X 120	10.69
	36 X 120	26.94		48 X 144	17.11
	48 X 96	28.73	.020	24 X 72	3.42
	48 X 120	35.92		36 X 96	6.84
	48 X 144	43.11		36 X 120	8.55
	60 X 144	53.89	.016	24 X 72	2.74
.050	36 X 96	17.11			

† Also available in a Special
Dull Finish.

*H24 Temper

ALUMINUM

3003-H25 SHEET

One Side Bright Mill Finish
Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.063	36 X 96	21.55	.040	48 X 144	27.37
	48 X 144	43.11	.032	36 X 96	10.95
.050	36 X 96	17.11	.025	36 X 96	8.55
	48 X 144	34.21	.020	36 X 96	6.84
.040	36 X 96	13.68			

3003-F PLATE

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.250	36 X 96	85.54
.250	48 X 144	171.07

3105-H25 SHEET

Mill Finish

Also Available In Various Patterns

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
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.050	36 X 96	17.11
	48 X 120	28.51
	48 X 144	34.22
.040	36 X 96	13.68
	48 X 120	22.81
	48 X 144	27.36
.032	36 X 96	10.95
	48 X 120	18.25
	48 X 144	21.90
.027	36 X 96	9.24
	48 X 120	15.40
	48 X 144	18.48
.024	36 X 96	8.21
	48 X 120	13.68
	48 X 144	16.42
.019	36 X 96	6.50
	48 X 120	10.83
	48 X 144	13.00

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

WIRE • ROD • BAR

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

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BRASS

COPPER

ALUMINUM

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Milik Str.
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TRowbrid
Dir. Dist.
TWX-617

PHILADE
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BALdwin
Dir. Dist.
TWX-215

#5 STUCCO PATTERN SHEET

3003-H114 Flat Pattern Sheet
Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.040	36 X 96	13.65
	48 X 144	27.37
.032	36 X 96	10.95
	48 X 144	21.90
.025	36 X 96	8.55
	48 X 144	17.11
.020	36 X 96	6.84

3003-H114 EXPANDED ALUMINUM SHEET

STOCK SIZES — 4 ft. x 8 ft.

Style Designation	STANDARD					FLATTENED				
	Ibs. per Sq. ft.	Mesh Sizes (in inches)		Strand Siz. (in inches)		Ibs. per Sq. ft.	Mesh Sizes (in inches)		Strand Siz. (in inches)	
		Wid. *	Len. *	Thick- ness	Width		Wid. *	Len. *	Thick- ness	Width
		SWD	LWD				SWD	LWD		
1/2" NO.051"	.27	.462	1.20	.051	.8969	.25	.46	1.26	.045	.097
1/2" NO.081"	.44	.462	1.20	.081	.0883	.41	.46	1.26	.067	.101
3/4" NO.051"	.17	.923	2.00	.051	.1094	.16	.923	2.125	.040	.132
3/4" NO.081"LT	.32	.923	2.00	.081	.1284	.30	.923	2.125	.070	.141
3/4" NO.081"HY	.41	.923	2.00	.081	.1646	.38	.923	2.125	.070	.182
3/4" NO.125"	.65	.923	2.00	.125	.1704	.61	.923	2.125	.095	.212
1 1/2" NO.081"	.22	1.33	3.00	.081	.1275	.20	1.33	3.125	.070	.138
1 1/2" NO.125"	.43	1.33	3.00	.125	.1629	.40	1.33	3.125	.080	.240

*S.W.D. denotes short dimension of diamond; L.W.D. denotes long dimension of diamond. Sheet width is measured in the direction of the short dimension of the diamond, and sheet length is measured in the direction of the long dimension of the diamond.

#10 FLUTED PATTERN SHEET

3003-H114 Flat Pattern Sheet
Mill Finish, Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.063	48 X 144	43.7
.050	48 X 144	34.7
.040	48 X 144	27.6
	48 X 120	22.8
	48 X 96	18.4

ALUMINUM

#10 FLUTED PATTERN SHEET

5005-H114 Flat Pattern Sheet
Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.063	48 X 144	42.67
.050	48 X 144	33.87
.040	48 X 144	27.09

#E13 DIAMOND PATTERN SHEET

3003-H114 Flat Pattern Sheet
Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.040	48 X 144	27.6
.032	48 X 144	21.9
.025	48 X 144	17.3

#E14 SQUARE PATTERN SHEET

3003-H114 Flat Pattern Sheet
Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.040	48 X 144	27.37	.032	48 X 144	21.90

#E15 LEATHER GRAIN

3003-H114 Flat Pattern Sheet
Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.040	48 X 144	27.37	.025	48 X 144*	17.10
.032	48 X 120*	18.25			
	48 X 144	21.90			

*H154 Temper

LIGHTING SHEET - TYPE I

1100-H18
Specular Finish, Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.032	24 X 72	5.4	.020	24 X 72	3.4
.025	24 X 72	4.3			

STAINLESS STEEL

WIRE • ROD • BAR

TUBING • PIPE

BRASS

STRUCTURAL SHAPES

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MONEL-NICKEL WEIGHTS

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SHEET • PLATE

ROD • SHAPES • WIRE

ALUMINUM

LIGHTING SHEET—TYPE II

1100-H18
Specular Finish, Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.032	24 X 72	5.4
	24 X 96	7.2
.025	24 X 72	4.3

ANOCLOAD SHEET

Description	Thickness & Size (in inches)	Temper	Pounds Per Sheet
TYPE 10, PLAIN FINISH	.125 X 48 X 144	H24	84.5
	.063 X 48 X 144	H14	42.7
TYPE 10, #10 FLUTED FINISH	.125 X 48 X 144	H114	84.5
	.063 X 48 X 144	H154	42.7
TYPE 20, PLAIN FINISH	.125 X 48 X 144	H24	84.5
	.063 X 48 X 144	H14	42.7
TYPE 20, #10 FLUTED FINISH	.125 X 48 X 144	H114	84.5
	.063 X 48 X 144	H154	42.7

NO. 32 ALUMILITE* SHEET

Thickness (in inches)	Size (in inches)	Temper	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Temper	Pounds Per Sheet
.125	36 X 120	H24	52.92	.040	36 X 96	H14 & H26	13.54
	48 X 120	"	70.56		36 X 120	"	16.93
	48 X 144	"	84.67		48 X 96	H14	18.06
.090	48 X 144	H14 & H26	60.68		48 X 120	"	22.58
					48 X 144	H14 & H26	27.10
.063	36 X 120	"	26.66				
	48 X 144	"	42.62				
.050	36 X 96	"	16.94	.032	36 X 96	"	10.82
	36 X 120	"	21.17		36 X 120	"	13.52
	48 X 96	H14	22.58		48 X 96	"	14.46
	48 X 120	"	28.22		48 X 120	H14	18.07
	48 X 144	"	33.87		48 X 144	"	21.73

*Aluminum sheet with a surface quality developed for applications of protective and decorative coatings in natural or colored finished by the Alumilite process.

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TRowbrid
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TWX-617

PHILADE
1955 W. H
BAldwin
Dir. Dist.
TWX-215

ALUMINUM

#718-F BRAZING SHEET

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.010	6 X 24	.145
.015	6 X 24	.218

5005-H34 SHEET

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
*.125	36 X 96	42.34	.050	48 X 120	28.24
	36 X 120	52.80		48 X 144	33.87
	48 X 120	70.40		36 X 96	13.55
	48 X 144	84.67		36 X 120	17.07
	36 X 96	33.84		48 X 96	18.29
	48 X 144	67.68		48 X 120	22.76
	36 X 96	30.48		48 X 144	27.09
	48 X 144	60.96		36 X 96	10.84
	36 X 96	27.09		36 X 120	13.56
	36 X 120	33.90		48 X 96	14.46
.100	48 X 120	45.20		48 X 120	18.08
	48 X 144	54.19		48 X 144	21.67
	36 X 96	21.34		36 X 96	8.47
	36 X 120	26.67		36 X 120	10.71
	48 X 96	28.45		48 X 96	11.42
.090	48 X 120	35.56		48 X 120	14.28
	48 X 144	42.67		48 X 144	16.94
	36 X 96	16.93		36 X 96	6.77
	36 X 120	21.18		36 X 120	8.52
.080	48 X 96	22.59		36 X 96	5.42
				36 X 120	6.72

*Furnished in H24 Temper only

5052-O SHEET

Mill Finish

.040 and heavier Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	126.0	.050	48 X 144	33.2
.125	48 X 144	82.6	.040	36 X 96	13.3
.090	48 X 144	59.8		48 X 144	26.7
.080	48 X 144	53.1	.032	36 X 96	10.6
.063	36 X 96	20.9		48 X 144	21.2
	48 X 144	41.8	.025	36 X 96	8.4
.050	36 X 96	16.6	.020	36 X 96	6.7

COPPER

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• CASTINGS

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PHILADE

1955 W. H

Baldwin S

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TWX-215

5052-H32 SHEET

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	36 X 96*	63.69	.050	36 X 96	16.76
	48 X 144*	127.39		48 X 96	22.35
.125	36 X 90	39.14	.040	48 X 144	33.52
	36 X 96	41.90		36 X 96	13.41
.100	48 X 96	55.04	.032	36 X 144	20.27
	48 X 144	83.81		48 X 96	17.88
.090	48 X 144	66.40	.025	48 X 144	26.82
	36 X 90	28.12		36 X 96	10.73
.080	36 X 96	30.17	.020	48 X 96	14.30
	48 X 96	40.23		48 X 120	21.45
.063	48 X 120	50.44	.025	36 X 96	8.38
	48 X 144	60.52		36 X 144	12.57
.050	36 X 96	26.82	.020	36 X 96	6.70
	48 X 96	35.76		48 X 144	10.06
.040	48 X 144	53.64	.020	36 X 144	
	36 X 96	21.12		36 X 96	
.032	48 X 96	28.16	.020	48 X 144	
	48 X 120	35.20		36 X 120	
.025	48 X 144	42.24	.020	36 X 120	
	36 X 96	16.76		36 X 96	
.020	36 X 120	20.97	.020	48 X 96	
	48 X 96	22.35		48 X 120	
.015	48 X 120	27.96	.015	36 X 120	

*H22 Temper

5052-H34 SHEET

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 72	63.69	.050	48 X 144	33.52
	48 X 144	127.39		36 X 96	13.41
.125	48 X 144	83.81	.040	36 X 120	16.89
	48 X 144	67.20		48 X 96	17.88
.100	48 X 144	60.34	.032	48 X 144	22.52
	48 X 144	53.64		36 X 96	10.73
.090	36 X 96	21.12	.032	48 X 96	14.30
	36 X 120	26.40		48 X 120	17.88
.080	48 X 120	35.20	.025	48 X 144	21.45
	48 X 144	42.24		36 X 96	8.38
.063	36 X 96	16.76	.020	36 X 96	6.70
	36 X 120	20.97		48 X 120	
.050	48 X 96	22.35	.020	36 X 120	
	48 X 120	27.96		36 X 96	

5052-F PLATE

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Plate
.250	36 X 96	84
	48 X 144	168
	60 X 144	210

ALUMINUM

5086-H32 SHEET AND PLATE

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.1500	36 X 96	497.66
.1250	36 X 96	414.72
.1000	36 X 96	331.78
.750	36 X 96	248.84
.500	36 X 96	165.89
.375	36 X 96	124.42
.313	48 X 144	202.68
.250	48 X 144	165.89

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	126.26
.125	48 X 144	82.94
.090	48 X 96	39.94
	48 X 144	59.90
	60 X 96	49.92
	60 X 120	62.40
.063	48 X 144	41.79

5454-H32 SHEET AND PLATE

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	126.07

Mill Finish

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.125	48 X 144	82.94

5456-H321 PLATE

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
1.000	60 X 144	829.44
.750	60 X 144	622.08
.500	60 X 144	414.72
.375	60 X 144	311.04
.250	60 X 144	207.36

6061-O SHEET AND PLATE

Mill Finish

Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.250	48 X 144	169.34
.190	48 X 144	128.70
.125	48 X 144	84.67
.100	48 X 144	67.74
.090	48 X 144	60.96
.080	48 X 144	54.19

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.063	48 X 144	42.67
.050	48 X 144	33.87
.040	48 X 144	27.09
.032	48 X 144	21.67
.025	36 X 144	12.70
.012	36 X 96	5.18

6061-T4 SHEET

Mill Finish

Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	128.70
.125	48 X 144	84.67
.090	48 X 144	60.96
.080	48 X 144	54.19
.063	48 X 144	42.67

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.050	48 X 144	33.87
.040	48 X 144	27.09
.032	48 X 144	21.67
.025	36 X 144	12.70

SHEET • PLATE

ROD • SHAPES • WIRE

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BALdwin
Dir. Dist
TWX-21

6061-T6 SHEET

Mill Finish
Identified and Oiled

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	128.70	.080	48 X 144	54.19
	60 X 144	160.80		60 X 144	68.40
	72 X 144	192.96	.063	36 X 96	21.33
.160	48 X 144	108.38		48 X 144	42.67
.125	36 X 144	63.36	.050	36 X 96	16.93
	48 X 96	56.32		48 X 144	33.87
	48 X 144	84.67	.040	36 X 96	13.54
	60 X 144	105.60		48 X 144	27.09
.100	48 X 144	67.74	.032	36 X 96	10.83
	60 X 144	84.60		48 X 144	21.67
.090	48 X 144	60.96	.025	36 X 144	12.70

6061-T651 PLATE

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Plate	Thickness (in inches)	Size (in inches)	Pounds Per Plate
3.000	36 X 96	1016.04	.750	36 X 96	254.01
2.500	36 X 96	846.70	48 X 144		508.02
2.000	36 X 96	677.36	.625	36 X 96	211.68
	48 X 144	1354.72		48 X 144	423.35
1.750	36 X 96	592.69	.500	36 X 96	169.34
	48 X 144	1185.38		48 X 144	338.68
1.500	36 X 96	508.02	.375	72 X 144	508.02
	48 X 144	1016.04		36 X 96	127.01
1.250	48 X 144	846.70	.313	36 X 96	106.00
	36 X 96	423.36	.250	36 X 96	84.67
1.000	36 X 96	338.68		48 X 144	169.34
	48 X 144	677.36		60 X 144	211.68
	72 X 144	1016.04		60 X 240	352.80
.875	48 X 144	592.69		72 X 144	254.01

3003 ABRASIVE TREAD PLATE

Thickness (in inches)	Size (in inches)	Pounds	
		Plate	Sq. Ft.
.250	48X144	163.20	3.4
.188	48X144	124.80	2.6
.125	48X144	81.60	1.7

ALUMINUM

6061-T6 TREAD PLATE

Mill Finish, Pattern C-102

Thickness (in inches)	Size (in inches)	Pounds		Thickness (in inches)	Size (in inches)	Pounds	
		Plate	Sq. Ft.			Plate	Sq. Ft.
.250	36X144	133.20	3.7	.156	48X192	140.8	2.2
	48X192	236.8	"		60X192	176	"
.188	60X192	296	"	.125	48X192	121.6	1.9
	48X192	179.2	2.8		60X192	152.0	"
	60X192	224	"	.100	48X192	89.6	1.4

2024-O BARE PLATE

Mill Finish

Identified and Oiled

Thickness (in inches)	Size (in inches)	Pounds Per Plate
.250	48 X 144	172.80

2024-O BARE SHEET

Mill Finish

Identified and Oiled

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	131.33
.160	48 X 144	110.59
.125	48 X 144	86.40
.100	48 X 144	69.12
.090	48 X 144	62.21
.080	48 X 144	55.22
.071	48 X 144	49.08
.063	48 X 144	43.55
.050	48 X 144	34.56
.040	48 X 144	27.65
.032	48 X 144	22.12
.025	48 X 144	17.28

2024-T3 BARE SHEET

Mill Finish

Identified and Oiled

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	36 X 96	65.76	.071	48 X 144	49.08
	48 X 144	131.33	.063	48 X 144	43.55
.160	48 X 144	110.59	.050	48 X 144	34.56
.125	36 X 96	43.20	.040	48 X 144	27.65
	48 X 144	86.40	.032	48 X 144	22.12
.100	48 X 144	69.12	.025	48 X 144	17.28
.090	48 X 144	62.21	.020	36 X 144	10.37
.080	48 X 144	55.22			

SHEET • PLATE

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2024-T351 BARE PLATE

Mill Finish
Identified and Oiled

Thickness (in inches)	Size (in inches)	Pounds Per Plate	Thickness (in inches)	Size (in inches)	Pounds Per Plate
3.000	36 X 96	1036.80	.750	48 X 144	604.80
2.500	36 X 96	864.00		24 X 72	129.60
2.000	24 X 72	345.60		36 X 96	259.20
	36 X 96	691.20		48 X 144	518.40
	48 X 144	1382.40	.625	24 X 72	108.00
1.750	24 X 72	302.40		36 X 96	216.00
	36 X 96	604.80		48 X 144	432.00
	48 X 144	1209.60	.500	24 X 72	86.40
1.500	24 X 72	259.20		36 X 96	172.80
	36 X 96	518.40		48 X 144	345.60
	48 X 144	1036.80	.375	24 X 72	64.80
1.250	24 X 72	216.00		36 X 96	129.60
	36 X 96	432.00		48 X 144	259.20
	48 X 144	864.00	.313	24 X 72	54.09
1.000	24 X 72	172.80		36 X 96	108.17
	36 X 96	345.60		48 X 144	216.34
	48 X 144	691.20	.250	24 X 72	43.20
.875	24 X 72	151.20		36 X 96	86.40
	36 X 96	302.40		48 X 144	172.80
				60 X 144	216.00

2024-O ALCLAD SHEET

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	131.33	.050	48 X 144	34.56
.160	48 X 144	110.59	.040	48 X 144	27.65
.125	48 X 144	86.40	.032	48 X 144	22.12
.100	48 X 144	69.12	.025	48 X 144	17.28
.090	48 X 144	62.21	.020	36 X 144	10.37
.080	48 X 144	55.22		48 X 144	13.83
.071	48 X 144	49.08	.016	36 X 144	8.29
.063	48 X 144	43.55			

2024-O ALCLAD PLATE

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Plate
.250	48 X 144	172.80

ALUMINUM

2024-T3 ALCLAD SHEET

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	131.33	.040	48 X 96	18.43
.160	48 X 144	110.59		48 X 120	23.20
.125	48 X 144	86.40		48 X 144	27.65
.100	48 X 144	69.12	.032	48 X 144	22.12
.090	48 X 144	62.21	.025	48 X 144	17.28
.080	48 X 144	55.22	.020	36 X 144	10.37
.071	48 X 144	49.08		48 X 144	13.83
.063	48 X 144	43.55	.016	36 X 144	8.29
.050	48 X 96	23.04		48 X 144	11.06
	48 X 120	28.80	.012	48 X 144	8.73
	48 X 144	34.56			

2024-T351 ALCLAD PLATE

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Plate
.250	48 X 144	172.80

7075-T6 BARE SHEET AND

7075-T651 BARE PLATE

Mill Finish
Identified and Oiled

Thickness (in inches)	Size (in inches)	Pounds Per Plate	Thickness (in inches)	Size (in inches)	Pounds Per Plate
3.000	36 X 96	1046.88	.313	36 X 96	109.20
2.000	24 X 72	348.96	.250	48 X 144	174.50
	36 X 96	697.92	.125	48 X 144	87.26
1.750	36 X 96	610.80	.100	48 X 144	69.81
1.500	24 X 72	261.72	.090	48 X 144	63.02
	36 X 96	523.44	.071	48 X 144	49.45
1.250	24 X 72	218.10	.063	48 X 144	43.97
	36 X 96	436.20	.050	48 X 144	34.91
1.000	36 X 96	348.96	.040	48 X 144	27.92
.875	36 X 96	305.52	.032	48 X 144	22.35
.750	36 X 96	261.84	.025	48 X 144	17.45
.625	36 X 96	218.16	.020	48 X 144	13.96
.500	36 X 96	174.48	.016	48 X 144	11.15
.375	36 X 96	130.80			
	48 X 144	261.60			

SHEET - PLATE

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WEIGHTS
MONEL-NICKEL

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WELDING
BRAZING PRODUCTS

ALUMINUM

ALUMINUM

7075-O BARE SHEET

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.125	48 X 144	87.26	.050	48 X 144	34.91
.100	48 X 144	69.81	.032	48 X 144	22.35
.090	48 X 144	63.02	.025	48 X 144	17.45
.071	48 X 144	49.45	.020	48 X 144	11.15
.063	48 X 144	43.97			

7075-O ALCLAD SHEET

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	132.64	.050	48 X 144	34.90
.160	48 X 144	111.69	.040	48 X 144	27.93
.125	48 X 144	87.26	.032	48 X 144	22.34
.100	48 X 144	69.81	.025	36 X 144	13.09
.090	48 X 144	62.83	.020	36 X 144	10.47
.080	48 X 144	55.77		48 X 144	13.97
.071	48 X 144	49.57		36 X 144	8.32
.063	48 X 144	43.99			

7075-T6 ALCLAD SHEET

Mill Finish
Identified and Interleaved

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.190	48 X 144	132.64	.040	48 X 144	27.93
.160	48 X 144	111.69	.032	48 X 144	22.34
.125	48 X 144	87.26	.025	36 X 144	13.09
.100	48 X 144	69.81		48 X 144	17.45
.090	48 X 144	62.83	.020	36 X 144	10.47
.080	48 X 144	55.77		48 X 144	13.97
.071	48 X 144	49.57		36 X 144	8.32
.063	48 X 144	43.99		48 X 144	11.17
.050	48 X 144	34.90	.012	48 X 144	8.54

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ALUMINUM

TOOL AND JIG PLATE

TYPE 300 - Cast

Thickness (in inches)	Size (in inches)	Weight per Plate	Thickness (in inches)	Size (in inches)	Weight per Plate
4	48 X 96	1862	1	48 X 96	465
3 1/2	48 X 96	1629	3/4	48 X 96	349
3	48 X 96	1396	5/8	48 X 96	291
2 1/2	48 X 96	1164	1/2	48 X 96	233
2	48 X 96	931	3/8	48 X 96	175
1 3/4	48 X 96	814	5/16	48 X 96	148
1 1/2	48 X 96	698	1/4	48 X 96	116
1 1/4	48 X 96	582			

RIGIDIZED ALUMINUM SHEET

Aluminum Sheet is also available with rigidized patterns. There is a large number of attractive patterns to select from. It can be fabricated the same as plain flat-rolled metal. Call for additional information.

INDUSTRIAL ROOFING, SIDING AND ACCESSORIES

Corrugated Industrial Roofing and Siding

THICKNESS: .024" AND .032"
 LENGTHS: INCREMENTS OF 6 INCHES
 .024" — 3' THRU 24'
 .032" — 3' THRU 30'
 WIDTHS: ROOFING 35" OVER-ALL (32" COVERAGE WITH
 1 1/2 CORRUGATIONS SIDE LAP)
 48 1/3" OVER-ALL (45 1/3" COVERAGE
 WITH 1 1/2 CORRUGATIONS SIDE LAP)
 SIDING 33 3/4" OVER-ALL (32" COVERAGE WITH
 1 CORRUGATION SIDE LAP)

CORRUGATION: 2.67" PITCH X 1/8" DEPTH
 WEIGHT: .024" — 41.4 POUNDS PER 100 SQUARE FEET
 .032" — 55.2 POUNDS PER 100 SQUARE FEET
 FINISH: PLAIN MILL FINISH
 STUCCO EMBOSSED (E5 PATTERN)
 LOW SPECULAR GLOSS
 EMBOSSED WITH ALUMALURE FINISH

Industrial Siding Sheet, 4-Inch Ribbed

THICKNESS: .032" AND .040"
 LENGTHS: 3' THRU 30' IN INCREMENTS OF 6 INCHES
 WIDTHS: 41 5/8" OVER-ALL (40" COVERAGE WITH 1 RIB
 SIDE LAP)
 RIB: 1" DEEP, 4" PITCH, 1 5/8" OUTER FLAT, 1 3/8"
 INNER FLAT
 WEIGHT: .032" — 57.5 POUNDS PER 100 SQUARE FEET
 .040" — 71.8 POUNDS PER 100 SQUARE FEET
 FINISH: STUCCO EMBOSSED
 EMBOSSED WITH ALUMALURE FINISH

ROD • SHAPES • WIRE

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 MONEL-NICKEL

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ALUMINUM

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INDUSTRIAL ROOFING, SIDING AND ACCESSORIES

Industrial Siding Sheet, 8-Inch Ribbed

THICKNESS:	.032" AND .040"
LENGTHS:	3' THRU 30' IN INCREMENTS OF 6 INCHES
WIDTHS:	41 $\frac{5}{8}$ " OVER-ALL (40" COVERAGE WITH 1 RIB SIDE LAP)
RIB:	1" DEEP, 8" PITCH, 5 $\frac{5}{8}$ " OUTER FLAT, 1 $\frac{3}{8}$ " INNER FLAT
WEIGHT:	.032" — 51.9 POUNDS PER 100 SQUARE FEET .040" — 64.8 POUNDS PER 100 SQUARE FEET
FINISH:	STUCCO EMBOSSED EMBOSSED WITH ALUMALURE FINISH

Industrial Roofing and Siding, V-Beam

THICKNESS:	.040" AND .050"
LENGTHS:	3' THRU 30' IN INCREMENTS OF 6 INCHES
WIDTHS:	41 $\frac{5}{8}$ " OVER-ALL (39" COVERAGE WITH 1-V SIDE LAP)
V CORRUGATION:	1 $\frac{3}{4}$ " DEEP, 4 $\frac{7}{8}$ " PITCH, $\frac{3}{4}$ " EACH ON TOP AND BOTTOM FLAT
WEIGHT:	.040" — 72.2 POUNDS PER 100 SQUARE FEET .050" — 90.3 POUNDS PER 100 SQUARE FEET
FINISH:	STUCCO EMBOSSED EMBOSSED WITH ALUMALURE FINISH

Perforated Corrugated Sheet

THICKNESS:	.024"
LENGTHS:	3' THRU 24' IN INCREMENTS OF 6 INCHES
WIDTHS:	33 $\frac{3}{4}$ " OVER-ALL (32" COVERAGE WITH 1 CORRUGATION SIDE LAP)
PERFORATIONS:	$\frac{1}{8}$ " DIAMETER ON $2\frac{1}{64}$ " STAGGERED CENTERS, APPROXIMATELY 14% OF SURFACE OPEN
CORRUGATION:	2.67" PITCH X $\frac{1}{8}$ " DEPTH
FINISH:	STUCCO EMBOSSED EMBOSSED WITH ALUMALURE FINISH
WEIGHT:	APPROXIMATELY 37.3 POUNDS PER 100 SQUARE FEET

YOU
SERV
YOUR
META

NEW Y
Worth
P. O. Bo

CARTE
P. O. Bo
Milik St
YOrktov
Dir. Dis
TWX-20

HARRIS
1000 Sou
Humbol
Dir. Dis
TWX-20

CAMBR
281 Alba
TRowbr
Dir. Dis
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

ALUMINUM

INDUSTRIAL ROOFING ACCESSORIES

Description	Size (inches)
CLOSURE STRIP FOR CORRUGATED.....	.032 X 3 X 32
CLOSURE STRIP FOR V-BEAM.....	.040 X 4 ¹¹ / ₁₆ X 39
CLOSURE STRIP FOR 4" AND 8" RIBBED INDUSTRIAL SIDING.....	.032 X 3 ¹⁵ / ₁₆ X 40
ROLL FLASHING (ANNEALED TEMPER).....	.032 X 20 ⁵ / ₈ X 600
FLAT FLASHING SHEET.....	.032 X 36 X 96
FLAT FLASHING SHEET.....	.032 X 48 X 120
FLAT FLASHING SHEET.....	.040 X 36 X 96
FLAT FLASHING SHEET.....	.040 X 48 X 120
FLAT FLASHING SHEET.....	.050 X 36 X 96
FLAT FLASHING SHEET.....	.050 X 48 X 120
PLAIN RIDGE ROLL.....	.032 X 20 ⁵ / ₈ X 96
CORRUGATED SIDE WALL FLASHING.....	.032 X 13 ³ / ₄ X 96
CORRUGATED END WALL FLASHING.....	.032 X 13 ³ / ₄ X 42
COLOR CAPS (WITH STAINLESS STEEL INSERTS).....	5/8 O.D.
SLOTTED HEAD (TYPE A) SHEET METAL SCREW ALLOY 2024-T4.....	#12 X 3/4
STAINLESS STEEL SELF-TAPPING SCREWS (ALLOY 305 CADMIUM PLATED) WITH RECESSED HEX HEADS WITH A COM- POSITE ALUMINUM AND NEOPRENE WASHER ATTACHED	{ #14 X 1 #14 X 1 3/4 #14 X 3

1100-O COILED WIRE

Commercial Finish

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
.051	.0023	.091	.0076	1/8	.0145
.064	.0038	3/32	.0081	3/16	.0324
.081	.0060	.102	.0096	1/4	.0577

4043-O COILED WELDING WIRE

(Formerly "5% Silicon")

Commercial Finish

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/16	.0036	5/32	.0223
3/32	.0080	3/16	.0322
1/8	.0144	1/4	.0573

WIRE • ROD • BAR

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

STAINLESS STEEL

BRASS

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
DATA
BRAZING PRODUCTS

ALUMINUM

ALUMINUM

YOU
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META

NEW Y
WOrth 4
P. O. Bo

CARTE
P. O. Bo
Milik St
YOrktow
Dir. Dis
TWX-20

HARRIS
1000 Sou
Humbol
Dir. Dist
TWX-20

CAMBR
281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

4043-H18 COILED WELDING WIRE

Commercial Finish

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{16}$ (H18)	.0036	$\frac{5}{32}$	.0223
.091	.0075	$\frac{3}{16}$	.0322
$\frac{3}{32}$	.0080	$\frac{1}{4}$ (H16) TEMPER	.0573
$\frac{1}{8}$	.0144		

1100-H19 COILED WIRE

Diameter (in inches)	Pounds per Lineal Foot
.091	.0076
$\frac{1}{8}$	.0145
$\frac{3}{16}$ (H18)	.0324

1100 ROUND DRAWN STRAIGHT WIRE

Standard 12 Foot Lengths

(temper after diameter)

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$ (H19)	.0145	$\frac{3}{16}$ (H18)	.0324	$\frac{5}{16}$ (H14)	.0901
$\frac{5}{32}$ (H18)	.0225	$\frac{1}{4}$ (H16)	.0577		

1100-H14 RIVET WIRE COILED

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
.061	.0035	.123	.0143	.184	.0314
.092	.0078	.154	.0223	.247	.0560
.118	.0129	.162	.0242		

ALUMINUM

2017-H13 AND 2117-H15 RIVET WIRE — COILED

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
.092	.0078	.154	.0023	.247	.0560
.123	.0143	.184	.0314		

2017-T4 COILED WIRE

Diameter (in inches)	Pounds per Lineal Foot
.116	.0129
.172	.0272



1100-F ROUND ROD

Standard 12 Foot Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
COLD FINISHED					
3/8	.1297	1	.9227	2	3.6908
7/16	.1766	1 1/4	1.4417	*2 1/4	4.6711
1/2	.2306	1 3/8	1.7445	*2 1/2	5.7667
9/16	.2919	1 1/2	2.076	*3	8.3042
5/8	.3604	ROLLED		*3 1/2	11.3029
3/4	.5190	1 3/4	2.8257	*4	14.7630
7/8	.7064	1 7/8	3.2437		

*Random 6 to 12 foot Lengths.

†Random 3 to 12 foot Lengths.

STAINLESS STEEL

ROD • SHAPES • WIRE

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

BRASS

MONEL-NICKEL

ALUMINUM

ALUMINUM



2011-T3 ROUND ROD

Standard Screw Machine Stock*
Standard 12 Foot Lengths

Diameter (in Inches)	Pounds per Lineal Foot	Diameter (in Inches)	Pounds per Lineal Foot	Diameter (in Inches)	Pounds per Lineal Foot
DRAWN		COLD FINISHED		ROLLED	
1/8	.0149	19/32	.338	19/16	2.34
5/32	.0233	5/8	.375	1 5/8	2.53
3/16	.0336	21/32	.414	1 11/16	2.74
7/32	.0459	11/16	.454	1 3/4	2.95
1 5/64	.0525	3/4	.540	1 13/16	3.15
1/4	.0600	13/16	.633	1 7/8	3.37
17/64	.0679	7/8	.735	1 15/16	3.59
9/32	.0756	15/16	.845	2	3.84
5/16	.094	1	.960	2 1/8	4.34
CARTE	11/32	.113	1 1/16	1.08	2 1/4
P. O. Box	COLD FINISHED		1 1/8	1.22	2 3/8
Milik St.					5.41
YOrkto	3/8	.135	1 3/16	1.35	2 1/2
Dir. Dis	25/64	.147	1 1/4	1.49	2 9/16
TWX-20	13/32	.159	1 5/16	1.66	2 3/4
HARRI	7/16	.184	1 3/8	1.81	2 7/8
1000 So	15/32	.210	17/16	2.00	3
HUmbol	1/2	.240	1 1/2	2.16	
Dir. Dis	17/32	.271			
TWX-20	35/64	.290			
CAMBR	9/16	.305			
281 Alba					
TRowbri					
Dir. Dist					
TWX-61					

*All above items may be obtained in 2011-T8.

†Random 6 to 12 foot Lengths.

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

ALUMINUM



2017-T4 AND 2017-T451 ROUND ROD

(Temper designation listed)

Standard Screw Machine Stock† Standard 12 Foot Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
DRAWN					
		COLD FINISHED		ROLLED	
3/32	T4 .0083	25/32	T451 .580	*2 1/4	T451 4.81
1/8	" .0147	13/16	" .627	*2 5/16	" 5.08
5/32	" .023	7/8	" .727	*2 3/8	" 5.36
11/64	" .028	1 5/16	" .837	*2 7/16	" 5.64
3/16	" .033	1	" .956	*2 1/2	" 5.94
7/32	" .045	1 1/16	" 1.07	*2 9/16	" 6.24
15/64	" .054	1 1/8	" 1.21	*2 5/8	" 6.55
1/4	" .059	1 3/16	" 1.34	*2 3/4	" 7.19
17/64	" .07	1 1/4	" 1.48	*2 7/8	" 7.86
9/32	" .075	1 5/16	" 1.64	*3	" 8.55
5/16	" .093	1 3/8	" 1.79	*3 1/8	" 9.28
COLD FINISHED		1 7/16	" 1.98	*3 1/4	" 10.04
5/8	T4 .134	1 1/2	" 2.14	*3 3/8	" 10.83
13/32	" .157	ROLLED		1 3/2	" 11.64
7/16	" .182	1 9/16	T451 2.32	1 3/4	" 13.36
15/32	" .208	1 5/8	" 2.51	1 4	" 15.21
1/2	T451 .238	1 11/16	" 2.71	1 4/8	" 16.34
17/32	" .268	1 3/4	" 2.92	1 4 1/4	" 17.17
9/16	" .302	1 13/16	" 3.12	1 4 1/2	" 19.24
19/32	" .335	1 7/8	" 3.34	1 4 3/4	" 21.44
5/8	" .371	1 15/16	" 3.56	1 5	" 23.76
21/32	" .426	2	" 3.80	1 5 1/2	" 28.84
11/16	" .449	*2 1/16	" 4.05	1 6	" 34.21
23/32	" .491	*2 1/8	" 4.30	1 7	T4 46.57
3/4	" .535	*2 3/16	" 4.55	1 8	" 60.82

†Screw Machine Stock includes Sizes 1/8" to 3 3/8" inclusive.
Other Sizes are Regular Rod.

*Random 6 to 12 foot Lengths.

‡Random 3 to 12 foot Lengths.

STAINLESS STEEL

TUBING • PIPE

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EXTRUDED SHAPES
• CASTINGS

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SHEET • PLATE

ROD • SHAPES • WIRE

ALUMINUM

ALUMINUM



2024-T4 AND 2024-T351 ROUND WIRE AND ROD

(Temper designation listed)

Standard Screw Machine Stock[†]
Standard 12 Foot Lengths

Diameter (in inches)		Pounds per Lineal Foot	Diameter (in inches)		Pounds per Lineal Foot
DRAWN					
1/8	T4	.014	1 1/8	T351	3.302
3/16	"	.033	2	"	3.757
1/4	"	.059	*2 1/8	"	4.241
5/16	"	.092	*2 1/4	"	4.755
COLD FINISHED					
3/8	T4	.132	*2 3/8	"	5.298
7/16	"	.180	*2 1/2	"	5.870
1/2	T351	.235	*2 5/8	"	6.472
9/16	"	.297	*2 3/4	"	7.103
5/8	"	.367	*2 7/8	"	7.763
11/16	"	.444	*3	"	8.453
3/4	"	.528	*3 1/8	"	9.191
1 3/16	"	.620	*3 1/4	"	9.941
7/8	"	.719	*3 1/4	"	9.941
CARTE					
P. O. Bo					
Milik St					
YOrktov					
Dir. Dis					
TWX-20					
HARRI					
1000 So					
Humboldt					
Dir. Dis					
TWX-20					
CAMBR					
281 Alba					
TRowbr					
Dir. Dis					
TWX-61					
ROLLED					
1 9/16	T351	2.293	*5 1/4	"	25.89
1 5/8	"	2.480	*5 1/2	"	28.56
1 3/4	"	2.876	6	"	33.88
			6 1/2	T4	39.76

[†]Screw Machine Stock includes sizes
1/8" to 3 3/8" inclusive.
Other Sizes are Regular Rod.

*Random 6 to 12 foot lengths.
†Random 3 to 12 foot lengths.

ALUMINUM



6061-T6 AND 6061-T651 ROUND WIRE AND ROD

(Temper designation listed)

Diameter (in inches)		Pounds per Lineal Foot
-------------------------	--	---------------------------

DRAWN

$\frac{1}{8}$	T6	.014
$\frac{3}{16}$	"	.032
$\frac{1}{4}$	"	.058
$\frac{5}{16}$	"	.090

COLD FINISHED

$\frac{3}{8}$	T6	.130
$\frac{7}{16}$	"	.177
$\frac{1}{2}$	T651	.231
$\frac{9}{16}$	"	.291
$\frac{5}{8}$	"	.360
$\frac{3}{4}$	"	.519
$\frac{13}{16}$	"	.609
$\frac{7}{8}$	"	.706
$\frac{15}{16}$	"	.811
1	"	.923
$1\frac{1}{16}$	"	1.041
$1\frac{1}{8}$	"	1.17
$1\frac{3}{16}$	"	1.301
$1\frac{1}{4}$	"	1.44
$1\frac{5}{16}$	"	1.59
$1\frac{3}{8}$	"	1.74
$1\frac{1}{2}$	"	2.08
<hr/>		
ROLLED		
$1\frac{5}{8}$	T651	2.44
$1\frac{11}{16}$	"	2.627
$1\frac{3}{4}$	"	2.82
$1\frac{13}{16}$	"	3.031
$1\frac{7}{8}$	"	3.24

†Screw Machine Stock includes sizes $\frac{1}{8}$ " to $3\frac{3}{8}$ " inclusive.

Other Sizes are Regular Rod,

Standard Screw Machine Stock[‡] Standard 12 Foot Lengths

Diameter (in inches)		Pounds per Lineal Foot
$1\frac{15}{16}$	"	3.463
2	"	3.69
$2\frac{1}{16}$	"	3.925
$2\frac{1}{8}$	"	4.17
$2\frac{3}{16}$	"	4.415
$2\frac{1}{4}$	"	4.67
$2\frac{7}{8}$	"	5.204
$2\frac{1}{2}$	"	5.77
$2\frac{5}{8}$	"	6.357
$2\frac{11}{16}$	"	6.642
$2\frac{3}{4}$	"	6.98
$2\frac{13}{16}$	"	7.298
$2\frac{7}{8}$	"	7.626
*3	"	8.30
$3\frac{1}{8}$	"	9.010
$3\frac{1}{4}$	"	9.74
$3\frac{3}{8}$	"	10.510
$4\frac{1}{2}$	"	11.30
$4\frac{3}{4}$	"	12.98
4	"	14.76
$4\frac{1}{2}$	"	18.68
5	"	23.07
$5\frac{1}{2}$	"	28.00
6	"	33.22
$6\frac{1}{2}$	"	38.98
7	"	45.21

*Random 6 to 12 foot lengths.

†Random 3 to 12 foot lengths.

STAINLESS STEEL

BRASS

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CHEET • DIATE

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WEIGHTS

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1000 Sou
HUMBOLD
Dir. Dist
TWX-20

CAMBR
281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W. I
BALdwin
Dir. Dist
TWX-215

2014-F ROUND FORGING BAR

CLASS I

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1	.923	2 $\frac{1}{4}$	4.671
1 $\frac{1}{4}$	1.442	2 $\frac{1}{2}$	5.767
1 $\frac{1}{2}$	2.076	2 $\frac{5}{8}$	6.358
1 $\frac{3}{4}$	2.826	3 $\frac{1}{4}$	9.746
2	3.691	4 $\frac{1}{2}$	18.684

6061-F ROUND FORGING BAR

CLASS I

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
2 $\frac{1}{4}$	4.671	5	23.067
2 $\frac{1}{2}$	5.767	6	33.216
4 $\frac{1}{2}$	18.684		

7075-F ROUND FORGING BAR

CLASS I

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
2	3.691	3	8.304
2 $\frac{1}{2}$	5.767	4 $\frac{1}{2}$	18.684

ALUMINUM



6063-T5 EXTRUDED ROUND ROD

16 Foot Lengths

Diameter (in inches)	Pounds per Lineal Foot
1/2	.235
5/8	.368
3/4	.530
1	.942



6262-T9 ROUND WIRE AND ROD

Standard Screw Machine Stock
Standard 12 Foot Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
DRAWN		ROLLED	
1/4	.058	1 3/4	2.83
COLD FINISHED		2	3.69
3/8	.130	2 1/4	4.67
1/2	.230	2 1/2	5.76
5/8	.360	2 3/4	6.97
3/4	.518	3	8.29
7/8	.706		
1	.922		
1 1/4	1.43		
1 1/2	2.07		

STAINLESS STEEL

BRASS

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TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES • CASTINGS

ALUMINUM

ALUMINUM



7075-T6 AND 7075-T651 ROUND ROD

(Temper designation listed)

Standard 12 Foot Lengths

Diameter (in inches)		Pounds per Lineal Foot
COLD FINISHED		
$\frac{3}{8}$	T6	.133
$\frac{1}{2}$	T651	.237
$\frac{3}{4}$	"	.534
1	"	.930
$1\frac{1}{8}$	"	1.20
$1\frac{1}{4}$	"	1.484
$1\frac{3}{8}$	"	1.796
$1\frac{1}{2}$	"	2.14
$1\frac{5}{8}$	"	2.509
ROLLED		
$1\frac{3}{4}$	T651	2.91
2	"	3.80
$2\frac{1}{4}$		4.811
$2\frac{1}{2}$	"	5.94
$2\frac{3}{4}$	"	7.19
3	"	8.55
$3\frac{1}{2}$	"	11.64
4	"	15.21



2011-T3 HEXAGONAL BAR

Standard Screw Machine Stock
Standard 12 Foot Lengths

Size (in inches)		Pounds per Lineal Foot	Size (in inches)		Pounds per Lineal Foot
$\frac{1}{4}$	COLD FINISHED	.066	$1\frac{3}{16}$	COLD FINISHED	.699
$\frac{5}{16}$	"	.104	$\frac{7}{8}$	"	.810
$1\frac{1}{32}$	"	.125	$1\frac{5}{16}$	"	.929
$\frac{3}{8}$	"	.148	1	"	1.06
$\frac{7}{16}$	"	.203	$1\frac{1}{16}$	"	1.192
$\frac{1}{2}$	"	.265	$1\frac{1}{8}$	"	1.34
$\frac{9}{16}$	"	.335	$1\frac{1}{4}$	"	1.66
$\frac{5}{8}$	"	.413	$1\frac{3}{8}$	"	2.00
$1\frac{1}{16}$	"	.500	$1\frac{1}{2}$	"	2.38
$\frac{3}{4}$	"	.595	$1\frac{3}{4}$	"	3.254
			2	"	4.236

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META

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CAMBR
281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

ALUMINUM

CHEET • PLATE

ROD • SHAPES • WIRE

INDUSTRIAL PRODUCTS

WEIGHTS

FOUNDRY • WELDING
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STAINLESS STEEL

BRASS

COPPER

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

2017-T4 AND 2017-T451 HEXAGONAL BAR

(Temper designation listed)

Size (in inches)		Pounds per Lineal Foot
DRAWN		
3/16	T4	.037
1/4	"	.065
5/16	"	.102
COLD FINISHED		
3/8	T4	.147
7/16	"	.201
1/2	T451	.262
9/16	"	.332
5/8	"	.409
11/16	"	.495
3/4	"	.589
13/16	"	.692
7/8	"	.802
15/16	"	.920
1	"	1.05
11/16	"	1.18

Standard Screw Machine Stock Standard 12 Foot Lengths

Size (in inches)		Pounds per Lineal Foot
COLD FINISHED		
1 1/8	T451	1.33
1 3/16	"	1.47
1 1/4	"	1.64
1 5/16	"	1.80
1 3/8	"	1.98
1 7/16	"	2.16
1 1/2	"	2.36
ROLLED		
1 5/8	T451	2.77
1 3/4	"	3.21
1 1/8	"	3.69
2	"	4.19
2 3/16	"	5.21
*2 1/4	"	5.31
*2 1/2	"	6.55
*2 3/4	"	7.92
*3	"	9.43

*Random 6 to 12 foot lengths.

ALUMINUM



2024-T4 AND 2024-T351 HEXAGONAL WIRE AND BAR

(Temper designation listed)

Size (In inches)	Pounds per Lineal Foot	Size (In inches)	Pounds per Lineal Foot
COLD FINISHED			
3/16	T4 .036	1 1/8	T351 1.31
1/4	" .064	1 1/4	" 1.62
5/16	" .101	1 3/8	" 1.96
3/8	" .146	1 1/2	" 2.33
7/16	" .199		
1/2	T351 .259	1 5/8	T351 2.74
9/16	" .328	1 3/4	" 3.18
5/8	" .405	1 7/8	" 3.65
11/16	" .491	2	" 4.15
3/4	" .584	*2 1/4	" 5.25
7/8	" .794	*2 1/2	" 6.48
1	" 1.04	*2 3/4	" 7.85
		*3	" 9.34

*Random 6 to 12 foot lengths.

6061-T651 HEXAGONAL BAR

Standard 12 Foot Lengths

Size (In inches)	Pounds per Lineal Foot	Size (In inches)	Pounds per Lineal Foot
3/4	.572	1 11/16	2.897
7/8	.778	1 13/16	3.342
1	1.016	1 7/8	3.576
1 1/16	1.147	2	4.069
1 5/16	1.750	2 1/8	4.594
1 3/8	1.921	2 3/8	5.967
1 1/2	2.286	2 5/8	7.010
1 5/8	2.686		

ALUMINUM

YOU
SERVI
YOUR
META

NEW Y
WOrth 4
P. O. Bo

CARTEI
P. O. Bo
Milik St
YOrktow
Dir. Dist
TWX-20

HARRIS
1000 Sou
Humboldt
Dir. Dist
TWX-20

CAMBR
281 Alba
TRowbrid
Dir. Dist
TWX-61

PHILAD
1955 W. I
BALdwin
Dir. Dist
TWX-215

CUTTING • DRILLING
ROD • SHAPES • WIRE

STAINLESS STEEL

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

BRASS

COPPER

MONEL-NICKEL

ALUMINUM**6063-T5 EXTRUDED
HEXAGONAL BAR**

16 Foot lengths

Size (in inches)	Pounds per Lineal Foot
1/2	.259
3/4	.586
1	1.039
1 1/2	2.237

**6262-T9
HEXAGONAL BAR**Standard Screw Machine Stock
Standard 12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot
3/4	COLD FINISHED .571

3/4 COLD FINISHED .571

**1100-H14 SQUARE WIRE**

Standard 12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	
3/16 DRAWN	.0413	
1/4 "	.0734	
5/16 "	.1148	
*3/8 COLD FINISHED .1652		
*F Temper		

ALUMINUM

ALUMINUM



2017-T4 AND 2017-T451 SQUARE BAR

(Temper designation listed)

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
COLD FINISHED			
3/8	.170	7/8	.925
7/16	.231	1	1.21
1/2	.302	1 1/4	1.89
5/8	.472	1 1/2	2.62
3/4	.679	ROLLED	
13/16	.798	2	4.83

YOU
SERV
YOUR
META

NEW Y
WOrth 4
P. O. Bo

CARTEI
P. O. Bo
Milik St
YOrktow
Dir. Dist
TWX-20

HARRIS
1000 Sou
Humbold
Dir. Dist
TWX-20

CAMBR
281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21



Standard 12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
COLD FINISHED			
5/16	.120	1 3/4	3.66
3/8	.168	2	4.78
7/16	.229	EXTRUDED	
1/2	.299	2 1/4	6.076
9/16	.378	2 1/2	7.500
5/8	.467	2 3/4	9.076
3/4	.672	3	10.800
7/8	.916	ROLLED	
1	1.19	*3 1/4	12.6
1 1/8	1.51	†3 1/2	14.6
1 1/4	1.87	†4	19.2
1 1/2	2.69		

*Random 6 to 12 foot lengths.

†Random 3 to 12 foot lengths.

ALUMINUM



6061-T651 EXTRUDED SQUARE BAR

Standard 12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot
---------------------	---------------------------

2	4.80
*3 1/4	12.676

*Random 6 to 12 foot lengths.

6063-T5 EXTRUDED SQUARE BAR

Sharp Corners, 16 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/4	.075	5/8	.459	1 1/4	1.83
5/16	.116	3/4	.661	1 1/2	2.64
3/8	.168	1	1.17		
1/2	.294				

7075-T651 SQUARE BAR

Standard 12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot
---------------------	---------------------------

1	COLD FINISHED	1.21
1 1/2	" "	2.72
1 3/4	" "	3.70
2	ROLLED	4.80

STAINLESS STEEL

ROD • SHAPES • WIRE

MONEL-NICKEL

BRAZING PRODUCTS

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

ALUMINUM

ALUMINUM

2024-T4 AND 2024-T351 RECTANGULAR BAR

(Temper designation listed)

YOU
SERV
YOUR
META

NEW Y
WOrth 4
P. O. Bo

CARTE
P. O. Bo
Milik St
YOrktow
Dir. Dis
TWX-20

HARRIS
1000 Sou
Humbol
Dir. Dist
TWX-20

CAMBR
281 Alba
TRowbri
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

Square Edge

Standard 12 Foot Lengths

	Size (in inches)	Pounds per Lineal Foot		Size (in inches)	Pounds per Lineal Foot
COLD FINISHED					
1/8 X	1/2	T4	.075	3/4	" .449
	5/8	"	.094	7/8	" .524
	3/4	"	.112	1	" .599
	1	"	.150	1 1/4	" .749
	1 1/4	"	.187	1 1/2	" .899
	1 1/2	"	.225	1 3/4	" 1.048
	2	"	.300	2	" 1.198
3/16 X	1/2	"	.112	2 1/2	" 1.498
	5/8	"	.140	3	" 1.797
	3/4	"	.168		
	1	"	.225		
	1 1/4	"	.281		
	1 1/2	"	.337	* 8	" 4.793
	2	"	.449	*10	" 5.991
1/4 X	1/2	"	.150		
	5/8	"	.187		
	3/4	"	.225		
	7/8	"	.262		
	1	"	.300		
	1 1/4	"	.374		
	1 1/2	"	.449		
	2	"	.599		
	2 1/2	"	.749		
	3	"	.899		
ROLLED					
1/2 X	4	T351	2.377		
	6	"	3.595		
	* 8	"			
	*10	"			
COLD FINISHED					
5/8 X	3/4	T351	.562		
	7/8	"	.655		
	1	"	.749		
	1 1/4	"	.936		
	1 1/2	"	1.123		
	2	"	1.498		
3/4 X	1	"	.899		
	1 1/2	"	1.348		
	2	"	1.797		
	2 1/2	"	2.247		
	3	"	2.696		
ROLLED					
3/4 X	3 1/2	T351	3.146		
	* 6	"	5.392		
COLD FINISHED					
1 X	1 1/4	T351	1.498		
	1 1/2	"	1.797		
	1 3/4	"	2.097		
	2	"	2.397		
	2 1/2	"	2.996		
	3	"	3.595		
ROLLED					
1 X	* 3 1/2	T351	4.194		
	* 4	"	4.793		
	* 6	"	7.190		
COLD FINISHED					
1 1/4 X	1 1/2	T351	2.247		
	2	"	2.996		
	2 1/2	"	3.745		
ROLLED					
1 1/4 X	3	T351	4.494		
COLD FINISHED					
1 1/2 X	2	T351	3.595		

Continued on next page.

*3 to 12 foot lengths.

†6 to 12 foot lengths.

ALUMINUM

2024-T4 AND 2024-T351 RECTANGULAR BAR (Continued)

(Temper designation listed)

Size (in inches)		Pounds per Lineal Foot
ROLLED		
1 1/2 X 1 2 1/2	T351	4.494
"	"	5.392
*4	"	7.190
*6	"	10.78
*8	"	14.38
2 X 1 2 1/4	"	5.398
"	"	5.991
*3	"	7.190
3 1/2	"	8.387
*4	"	9.586

Square Edge Standard 12 Foot Lengths

Size (in inches)		Pounds per Lineal Foot
ROLLED		
2 X *6	T351	14.38
2 1/4 X *4	"	10.78
2 1/2 X *4	"	11.98
*4 1/2	"	13.48
*5	"	14.98
*6	"	17.97
2 3/4 X *4	"	13.18
3 X *4	"	14.38
*6	"	21.57

*3 to 12 foot lengths.
†6 to 12 foot lengths.

6061-T6 AND 6061-T651 EXTRUDED RECTANGULAR BAR

(Temper designation listed)

Size (in inches)		Pounds per Lineal Foot
6061-T6		
1/8 X 1	T6	.150
2	"	.300
3/16 X 3/4	"	.169
1	"	.226
1 1/2	"	.338
2	"	.451
1/4 X 1	"	.300
1 1/4	"	.376
1 1/2	"	.450
2	"	.600
3	"	.900
3/8 X 1/2	"	.225
3/4	"	.337
1	"	.450
1 1/4	"	.564
2	"	.900
3	"	1.350

Square Edge Standard 12 Foot Lengths

Size (in inches)		Pounds per Lineal Foot
6061-T651		
3/8 X 4	T6	1.800
6	"	2.700
1/2 X 3/4	T651	.441
1	"	.600
2	"	1.200
2 1/2	"	1.500
3	"	1.800
4	"	2.400
6	"	3.600
3/4 X 1	"	.900
2	"	1.800
3	"	2.700
4	"	4.800
6	"	10.800

SHEET • PLATE ROD • SHAPES • WIRE
INDUSTRIAL PRODUCTS

MONEL-NICKEL
WEIGHTS

FOUNDRY DATA
WELDING
BRAZING PRODUCTS

STAINLESS STEEL

TUBING • PIPE

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

ALUMINUM

ALUMINUM

7075-T6 AND 7075-T651 RECTANGULAR BAR

(Temper designation listed)

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
COLD FINISHED			
$\frac{1}{4} \times 1$	T6 .302	ROLLED	
$1\frac{1}{2}$	.454	$1\frac{1}{4} \times \frac{3}{4}$	T651 4.538
3	.905	$1\frac{1}{2} \times 2\frac{1}{2}$	4.538
$\frac{3}{8} \times 1$	.454	*4	7.260
$\frac{1}{2} \times 1\frac{1}{2}$	T651 .907	2 $\times 2\frac{1}{2}$	6.050
4	.2420	*3	7.260
$\frac{5}{8} \times 1$	.756	*4	9.680
$\frac{3}{4} \times 3$	.2723	*6	14.52
$1 \times 1\frac{3}{4}$	.2117	$2\frac{1}{2} \times *4$	12.10
2	.2420	*6	18.15
ROLLED			
3	T651 3.630	3 $\times *4$	14.52
*4	4.840	*4 $\frac{1}{2}$	16.33
		*6	21.78

*3 to 12 foot lengths
†6 to 12 foot lengths

6063-T5 EXTRUDED RECTANGULAR BAR

Sharp Corners, 16 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{1}{2}$	.075	$\frac{1}{4} \times \frac{1}{2}$	.15	$\frac{3}{8} \times 1\frac{1}{2}$	.675
$\frac{5}{8}$	.094	$\frac{5}{8}$	.187	2	.900
$\frac{3}{4}$	.113	$\frac{3}{4}$	.225	3	1.35
1	.150	1	.300	$\frac{1}{2} \times \frac{3}{4}$	.45
$1\frac{1}{4}$	.187	$1\frac{1}{4}$	.375	1	.600
$1\frac{1}{2}$	.226	$1\frac{1}{2}$	.45	$1\frac{1}{4}$	.75
$1\frac{3}{4}$	.263	$1\frac{3}{4}$	.525	$1\frac{1}{2}$	.900
2	.300	2	.600	2	1.200
$\frac{3}{16} \times \frac{1}{2}$	.113	$2\frac{1}{2}$	.750	$2\frac{1}{2}$	1.500
$\frac{3}{4}$	.169	3	.900	3	1.800
1	.226	$\frac{3}{8} \times \frac{1}{2}$	.224	$\frac{3}{4} \times 1\frac{1}{2}$	1.35
$1\frac{1}{4}$	.282	$\frac{5}{8}$	.281	2	1.800
$1\frac{1}{2}$	.338	$\frac{3}{4}$	.338	3	2.700
2	.451	1	.45	$1 \times 1\frac{1}{2}$	1.800
$2\frac{1}{2}$	.564	$1\frac{1}{4}$	.563	2	2.400

STAINLESS STEEL

ROD • SHAPES • WIRE

BRASS

TUBING • PIPE
STRUCTURAL SHAPESEXTRUDED SHAPES
• CASTINGS

COPPER

ALUMINUM**NO. 2 EC-T61
RECTANGULAR BUS BAR****Extruded
12 or 20 Foot Lengths**

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{4} \times 1$	.290	$\frac{1}{4} \times 4$	1.172
$1\frac{1}{2}$	.437	6	1.760
2	.584	$\frac{3}{8} \times 2$	.880
3	.878	4	1.760

3003-H14 DRAWN TUBE**Round
12 Foot Lengths**

O.D. (in inches)	Wall B. W. Gauge	Inches	Pounds per Lineal Foot	O.D. (in inches)	Wall B. W. Gauge	Inches	Pounds per Lineal Foot
$\frac{3}{16}$ X 24	.022	.013		1 X 20	.035	.126	
$\frac{1}{4}$ X 24	.022	.019		18	.049	.174	
20	.035	.028		17	.058	.204	
$\frac{3}{8}$ X 24	.022	.029		16	.065	.226	
22	.028	.036		1 $\frac{1}{8}$ X 17	.058	.230	
20	.035	.044		1 $\frac{1}{4}$ X 20	.035	.159	
$\frac{1}{2}$ X 22	.028	.049		18	.049	.219	
20	.035	.061		17	.058	.258	
18	.049	.083		1 $\frac{3}{8}$ X 17	.058	.285	
16	.065	.105		1 $\frac{1}{2}$ X 20	.035	.191	
$\frac{5}{8}$ X 22	.028	.063		18	.049	.266	
20	.035	.077		17	.058	.312	
18	.049	.105		16	.065	.347	
16	.065	.135		1 $\frac{3}{4}$ X 20	.035	.224	
$\frac{3}{4}$ X 20	.035	.093		18	.049	.311	
18	.049	.128		16	.065	.404	
17	.058	.149		2 X 20	.035	.257	
16	.065	.166		18	.049	.357	
$\frac{7}{8}$ X 20	.035	.110		16	.065	.469	
18	.049	.150		2 $\frac{1}{2}$ X 18	.049	.447	
17	.058	.177		16	.065	.586	
16	.065	.196		3 X 16	.065	.707	

ALUMINUM

ALUMINUM

3003-H18 DRAWN TUBE

Round

12 Foot Lengths

O.D. (in inches)	Wall		Pounds per Lineal Foot
	B. W. Gauge	Inches	
5/16 X 20	.035	.044	
1/2 X 20	.035	.061	
*2 X 21	.032	.235	

*Also available in 16, 18, and
20 foot lengths.

2024-T3 DRAWN TUBE

Round

12 Foot Lengths

O.D. (in inches)	Wall		Pounds per Lineal Foot	O.D. (in inches)	Wall		Pounds per Lineal Foot
	B. W. Gauge	Inches			B. W. Gauge	Inches	
3/16 X 20	.035	.020		1 X 18	.049	.175	
1/4 X 20	.035	.028			16	.065	.228
5/16 X 18	.049	.049			13	.095	.324
3/8 X 18	.049	.060		1 1/8 X 16	.065	.260	
	17	.058	.069	1 1/4 X 18	.049	.221	
1/2 X 20	.035	.061			16	.065	.290
5/8 X 20	.035	.077		1 1/2 X 20	.035	.193	
	18	.049	.106		18	.049	.268
	16	.065	.137		16	.065	.351
3/4 X 20	.035	.094		2 X 16	.065	.473	
	18	.049	.129	2 1/2 X 16	.065	.592	
7/8 X 18	.049	.152			11	.120	.108
1 X 20	.035	.127		3 X 11	.120	.131	

PHILADELPHIA
1955 W.
Baldwin
Dir. Dist.
TWX-21

ALUMINUM

5052-O DRAWN TUBE

Round 12 Foot Lengths

O.D. (in inches)	Wall		Pounds per Lineal Foot	O.D. (in inches)	Wall		Pounds per Lineal Foot
	B. W. Gauge	Inches			B. W. Gauge	Inches	
1/8 X 20	.035	.011		3/4 X 18	.049	.124	
3/16 X 20	.035	.019		1 X 20	.035	.123	
1/4 X 22	.028	.022		18	.049	.169	
20	.035	.027		1 1/4 X 20	.035	.154	
5/16 X 20	.035	.035		18	.049	.213	
3/8 X 20	.035	.043		1 1/2 X 18	.049	.258	
18	.049	.058		1 3/4 X 18	.049	.302	
1/2 X 20	.035	.059		2 X 20	.035	.249	
18	.049	.080		18	.049	.346	
5/8 X 20	.035	.074		16	.065	.455	
19	.042	.088		2 1/2 X 20	.035	.315	
18	.049	.102		18	.049	.434	
3/4 X 20	.035	.090					

INDUSTRIAL PRODUCTS
SHEET • PLATE ROD • SHAPES • WIRE

WEIGHTS
MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

STAINLESS STEEL

BRASS

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

ALUMINUM

ALUMINUM

YOU
SERV
YOU
META

NEW Y

WOrth 4
P. O. Bo

CARTE

P. O. Bo

Milik St

YOrktow

Dir. Dis

TWX-20

HARRIS

1000 Sou

HUmbol

Dir. Dis

TWX-20

CAMBR

281 Alba

TRowbr

Dir. Dist

TWX-61

PHILAD

1955 W.

BAldwIn

Dir. Dist

TWX-21

6061-T6 DRAWN TUBE

Round
12 Foot Lengths

O.D. (In Inches)	Wall			O.D. (In Inches)	Wall		
	B. W. Gauge	Inches	Pounds per Lineal Foot		B. W. Gauge	Inches	Pounds per Lineal Foot
3/16 X 20	.035	.020		1 X 18	.049	.172	
	18	.049	.025		17	.058	.202
1/4 X 20	.035	.028			16	.065	.224
	18	.049	.036		14	.083	.281
	17	.058	.041	1 1/8 X 20	.035	.141	
5/16 X 20	.035	.036			17	.058	.228
	18	.049	.048	1 1/4 X 20	.035	.157	
	17	.058	.055		18	.049	.217
3/8 X 20	.035	.044			17	.058	.256
	18	.049	.059		16	.065	.284
	17	.058	.068		14	.083	.357
	16	.065	.074	1 3/8 X 20	.035	.173	
7/16 X 20	.035	.052			17	.058	.282
	18	.049	.070	1 1/2 X 20	.035	.189	
	16	.065	.089		18	.049	.263
1/2 X 22	.028	.049			17	.058	.309
	20	.035	.060		16	.065	.344
	18	.049	.082		14	.083	.434
	17	.058	.095	1 5/8 X 20	.035	.206	
	16	.065	.104		17	.058	.336
5/8 X 22	.028	.062		1 3/4 X 17	.058	.363	
	20	.035	.076		14	.083	.510
	18	.049	.104	1 7/8 X 17	.058	.389	
	17	.058	.121	2 X 18	.049	.353	
	16	.065	.134		17	.058	.416
3/4 X 20	.035	.092			16	.065	.464
	18	.049	.127		14	.083	.590
	17	.058	.148	2 1/4 X 18	.049	.398	
	16	.065	.164		16	.065	.520
	14	.083	.204		14	.083	.660
7/8 X 20	.035	.109		2 1/2 X 16	.065	.580	
	18	.049	.149		14	.083	.740
	17	.058	.175	3 X 16	.065	.700	
	16	.065	.194		14	.083	.890
1 X 20	.035	.125					

6061-T6 EXTRUDED TUBE

Round
12 Foot Lengths

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot	O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1 1/2 X .125	.125	.635	2 1/2 X .125	.125	1.10
	.250	1.15		.250	2.08
2 X .125	.125	.866	3 X .125	.125	1.33
	.250	1.62		.250	2.54

ROD • SHAPES • WIRE

MONEL-NICKEL

STAINLESS STEEL

BRASS

STRUCTURAL SHAPES

EXTRUDED SHAPES • CASTINGS

COPPER

ALUMINUM

FURNITURE TUBE

Type III—Welded

Type II—Drawn

18 Foot Lengths

Type	O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
11 & 111	3/4 X	.049	.127
11	.065	.164	
111	7/8 X	.042	.129
11	1 X	.032	.115

Type	O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
11 & 111	1 X	.042	.149
11	.049	.172	
11	.065	.225	

6062 ROUND TUBE

Bare Heat Exchanger
Tube

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
5 1/2	.045	.920

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
7/8	.065	.194

6063-T832 DRAWN TUBE

Round
For TV Antenna Masts
10 Foot Lengths

O.D. (in inches)	Wall		Pounds per Lineal Foot
	B. W. Gauge	Inches	
1 3/8 X	19	.042	.207
1 1/2 X	19	.042	.226

6063-T5 EXTRUDED TUBE

Round
17 Foot Lengths

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
6 X	.188	4.04

Hollow Screw Machine Stock

ALLOYS: 2011-T3, 2011-T4511, 2017-T4511, 6062-T6511 AND
6062-T9SIZE RANGE: 1" O.D. TO 2 1/4" O.D. IN 1/16" INCREMENTS
2 3/4" O.D. TO 4" O.D. IN 1/8" INCREMENTS

WALL THICKNESS: 3/16" TO 1/2" IN 1/32" INCREMENTS

ALCOA ALUMINUM HOLLOW SCREW MACHINE STOCK IS FABRICATED TO CLOSE TOLERANCES PROVIDING A PRODUCT IDEALLY SUITED TO THE MANUFACTURE OF SCREW MACHINE PRODUCTS ON HIGH SPEED AUTOMATIC SCREW MACHINES.

ALUMINUM

Mechanical Tube (hollow rod)

ALLOYS: 2024-T4, 6061-T6 AND 7075-T6

SIZE RANGE: $1\frac{1}{4}$ " O.D. TO $2\frac{1}{4}$ " O.D. IN $\frac{1}{8}$ " INCREMENTS (IN 6061-T6 ONLY)

$2\frac{1}{4}$ " O.D. TO 4" O.D. IN $\frac{1}{8}$ " INCREMENTS

4" O.D. TO 8" O.D. IN $\frac{1}{4}$ " INCREMENTS

8" O.D. TO 12" O.D. IN $\frac{1}{2}$ " INCREMENTS

WALL THICKNESS: $\frac{1}{8}$ " TO $\frac{1}{2}$ " IN $\frac{1}{16}$ " INCREMENTS
 $\frac{1}{2}$ " TO 1" IN $\frac{1}{8}$ " INCREMENTS

ALCOA ALUMINUM MECHANICAL TUBE IS A PRODUCT THAT CAN BE MORE ECONOMICALLY MACHINED INTO A VARIETY OF PARTS THAN SOLID ROD USED FOR SIMILAR APPLICATIONS. IT IS FABRICATED TO TOLERANCES THAT ARE ENTIRELY ADEQUATE FOR MOST APPLICATIONS SINCE THE LARGER SIZES OF MECHANICAL TUBE ARE SELDOM MACHINED ON HIGH SPEED EQUIPMENT.

5050-O UTILITUBE ROUND TUBE

Coiled 50 and 100 Foot Lengths

O.D. (in inches)	Wall			Pounds per Lineal Foot	O.D. (in inches)	Wall			Pounds per Lineal Foot
	B. W. Gauge	Inches				B. W. Gauge	Inches		
$\frac{1}{4}$ X 23	.025*	.009			$\frac{3}{8}$ X 18	.049	.059		
$\frac{3}{16}$ X 22	.028*	.017			$\frac{1}{2}$ X 20	.035	.060		
$\frac{1}{4}$ X 21	.032*	.026				18	.049*	.082	
$\frac{5}{16}$ X 20	.035*	.036			$\frac{5}{8}$ X 18	.049*	.104		
$\frac{3}{8}$ X 20	.035*	.044			$\frac{3}{4}$ X 17	.058*	.148		

*Approved by American Gas Association.

5050-O UTILITUBE ROUND TUBE

Coiled 500 and 1000 Foot
Lengths

O.D. (in inches)	Wall			Pounds per Lineal Foot	O.D. (in inches)	Wall			Pounds per Lineal Foot
	B. W. Gauge	Inches				B. W. Gauge	Inches		
$\frac{1}{4}$ X 21	.032†	.026			$\frac{3}{8}$ X 20	.035†	.044		
$\frac{5}{16}$ X 20	.035†	.036				* 18	.049	.059	

*In 500 foot lengths only.

†Approved by American Gas Association.

3003-H14 DRAWN HEAT EXCHANGER TUBE

Alclad Inside, 16 Foot Lengths

O.D. (in inches)	Wall			Pounds per Lineal Foot	O.D. (in inches)	Wall			Pounds per Lineal Foot
	B. W. Gauge	Inches				B. W. Gauge	Inches		
$\frac{5}{8}$ X 18	.049	.105			1 X 16	.065	.226		
$\frac{3}{4}$ X 18	.049	.128				14	.083	.284	
	16	.065	.166		$1\frac{1}{4}$ X 14	.083	.360		
1 X 18	.049	.174							

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3003-H12 WELDED HEAT EXCHANGER TUBE

Alclad Inside and Outside,
16 Foot Lengths

O.D. (in inches)	Wall		Pounds per Lineal Foot	O.D. (in inches)	Wall		Pounds per Lineal Foot
	B. W. Gauge	Inches			B. W. Gauge	Inches	
.75 X 18	.049	.128		1 X 18	.049	.174	
16	.065	.166		16	.065	.226	

3003-H14 DRAWN HEAT EXCHANGER TUBE

Non-Clad, 16 Foot Lengths

O.D. (in inches)	Wall		Pounds per Lineal Foot
	B. W. Gauge	Inches	
.58 X 18	.049	.105	
.75 X 16'	.065	.166	
1 X 16	.065	.226	

6063-T5 SQUARE TUBE

Sharp Corners

Extruded 21' 1" Lengths

Size (in inches)	Wall (in inches)	Pounds per Lineal Foot	Size (in inches)	Wall (in inches)	Pounds per Lineal Foot
.75	.125	.376	1 1/2	.125	.825
1	.125	.526	1 3/4	.125	.974
1 1/4	.125	.674	2	.125	1.126

6063-T5 RECTANGULAR TUBE

Sharp Corners

Extruded 21' 1" Lengths

Size (in inches)	Wall (in inches)	Pounds per Lineal Foot	Size (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/2 X 1	.125	.383	1 3/4 X 3 1/2	.125	1.486
3/4 X 1 1/2	.125	.604	4	.125	1.633
1 X 1 1/2	.125	.677	4 1/2	.125	1.780
2	.125	.824	5	.125	1.927
1 1/4 X 2 1/2	.125	1.045	2 X 3	.125	1.412
1 1/2 X 2	.125	.971	5	.125	2.00
1 3/4 X 3	.125	1.339			

STAINLESS STEEL

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

WEIGHTS

BRASS

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

FOUNDRY • WELDING
BRAZING PRODUCTS

ALUMINUM

ALUMINUM

1100-F PIPE

Schedule 40
To Drawn Tube Specifications
20 Foot Lengths

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
1/2	.109	.840	.622	.294
3/4	.113	1.05	.824	.391
1	.133	1.315	1.049	.581
1 1/2	.145	1.900	1.610	.940
2	.154	2.375	2.067	1.26
3	.216	3.500	3.068	2.62

3003-H18 AND H112 PIPE

Schedule 40
1/8" thru 3/4" Drawn, 1" thru 12"
Extruded

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
* 1/8 H18	.068	.405	.269	.085
* 1/4 "	.088	.540	.364	.147
* 3/8 "	.091	.675	.493	.196
1/2 "	.109	.840	.622	.294
3/4 "	.113	1.05	.824	.391
1 H112	.133	1.315	1.049	.586
1 1/4 "	.140	1.660	1.380	.793
1 1/2 "	.145	1.900	1.610	.948
2 "	.154	2.375	2.067	1.27
2 1/2 "	.203	2.875	2.469	2.02
3 "	.216	3.500	3.068	2.64
3 1/2 "	.226	4.000	3.548	3.18
4 "	.237	4.500	4.026	3.77
5 "	.258	5.563	5.047	5.08
6 "	.280	6.625	6.065	6.62
8 "	.322	8.625	7.781	9.97
10 "	.365	10.75	10.02	14.1
*12 "	.375	12.75	12.00	17.1

*12-foot lengths.

6061-T6 PIPE

Schedule 40
1/8" thru 3/4" Drawn, 1" thru
12" Extruded

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
* 1/8	.068	.405	.269	.085
* 1/4	.088	.540	.364	.147
* 3/8	.091	.675	.493	.196
1/2	.109	.840	.622	.294
3/4	.113	1.05	.824	.391
1	.133	1.315	1.049	.581

(Continued)

*12 foot lengths.

CAMBR
281 Alb
TRowbr
Dir. Dis
TWX-61

PHILAD
1955 W.
BALdwin ■
Dir. Dis
TWX-21

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6061-T6 PIPE (Continued)

Schedule 40

$\frac{1}{8}$ " thru $\frac{3}{4}$ " Drawn, 1" thru
12" Extruded

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
1 $\frac{1}{4}$	.140	1.660	1.380	.786
1 $\frac{1}{2}$	.145	1.900	1.610	.940
2	.154	2.375	2.067	1.26
2 $\frac{1}{2}$	.203	2.875	2.469	2.00
3	.216	3.500	3.068	2.62
3 $\frac{1}{2}$	.226	4.000	3.548	3.15
4	.237	4.500	4.026	3.73
5	.258	5.563	5.047	5.06
6	.280	6.625	6.065	6.56
8	.322	8.625	7.981	9.88
10	.365	10.750	10.020	14.0
*12	.375	12.750	12.000	17.1

*12 foot lengths.

6063-T6 PIPE

Schedule 40

Extruded

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.109	.840	.622	.294
$\frac{3}{4}$	.113	1.050	.824	.391
1	.133	1.315	1.049	.581
1 $\frac{1}{4}$	.140	1.660	1.380	.786
1 $\frac{1}{2}$	.145	1.900	1.610	.940
2	.154	2.375	2.067	1.26
2 $\frac{1}{2}$	.203	2.875	2.469	2.00
3	.216	3.500	3.068	2.62
3 $\frac{1}{2}$	.226	4.000	3.548	3.15
4	.237	4.500	4.026	3.73
5	.258	5.563	5.047	5.06
6	.280	6.625	6.065	6.56
8	.322	8.625	7.981	9.88
10	.365	10.75	10.020	14.00
*12	.375	12.75	12.000	17.1

*12 foot lengths.

STAINLESS STEEL

SWEEP • DIATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

COPPER

ALUMINUM

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SERV
YOU
META

6061-T6 PIPE

Schedule 80

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
1	.179	1.315	.957	.751
1 $\frac{1}{4}$	.191	1.660	1.278	1.037
1 $\frac{1}{2}$	.200	1.900	1.500	1.256
2	.218	2.375	1.939	1.737
3	.300	3.500	2.900	3.547
3 $\frac{1}{2}$	.318	4.000	3.364	4.326
4	.337	4.500	3.826	5.183
5	.375	5.563	4.813	7.188

6063-T6 PIPE

Schedule 10

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
3/4	.083	1.050	.884	.297
1	.109	1.315	1.097	.486
1 $\frac{1}{4}$	.109	1.660	1.442	.625
1 $\frac{1}{2}$	.109	1.900	1.682	.721
2	.109	2.375	2.157	.913
2 $\frac{1}{2}$	.120	2.875	2.635	1.221
3	.120	3.500	3.26	1.498
4	.120	4.500	4.26	1.942
5	.134	5.563	5.295	2.686
6	.134	6.625	6.357	3.214

6063-T6 PIPE

Schedule 5

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Wall (in inches)	O.D. (in inches)	I.D. (in inches)	Pounds per Lineal Foot
1 $\frac{1}{4}$	.065	1.660	1.530	.383
1 $\frac{1}{2}$	.065	1.900	1.770	.441
2	.065	2.375	2.245	.555
2 $\frac{1}{2}$	.083	2.875	2.709	.856
3	.083	3.500	3.334	1.048
4	.083	4.500	4.334	1.354
5	.109	5.563	5.345	2.195
6	.109	6.625	6.407	2.623

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281 Alba
TRowbrie
Dir. Dist.
TWX-617

PHILAD
1955 W. I
BALdwin
Dir. Dist.
TWX-215

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6063-T6 CONSTRUCTION PIPE

20 Foot, 30 Foot, and 40 Foot Lengths

O.D. (in inches)	Wall (in inches)	I.D. (in inches)	Pounds per Lineal Foot
2	.050	1.914	.360
3		2.914	.545
4		3.906	.730
5	.052	4.896	.951
6	.058	5.884	1.273
7	.064	6.872	1.640
8	.072	7.856	2.109

6063-T832 HANDRAIL PIPE

20 Foot Lengths, Plain Ends

S.P.S. (in inches)	Pounds per Lineal Foot	
1 1/4 SCHEDULE 10	.625	
1 1/4 SCHEDULE 40	.786	
1 1/2 .. ..	.940	

UNITRACE PIPE AND FITTINGS

6063-T5, Extruded
30 Foot Standard Lengths

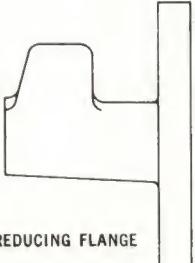
UNITRACE Size (in inches)	Pounds Per 100 Feet	UNITRACE FITTING WEIGHTS (Pounds Each)			
		Trace Cap	Connecting Flange	Reducing Flange	
			Weight	Reduction	
1 1/2	116.2	.11	1.60	4.0	2 1/2"-1 1/2"
2	159.8	.16	2.50	5.1	3"-2"
3	271.9	.26	4.80	6.1	4"-3"
4	390.2	.37	7.00	11.1	6"-4"
6	905.0	.60	12.2	17.0	8"-6"



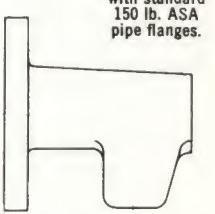
TRACE CAP



UNITRACE PIPE



REDUCING FLANGE



CONNECTING FLANGE

BOLT HOLES
IN FLANGED
CONNECTIONS
will mate
with standard
150 lb. ASA
pipe flanges.

STRUCTURAL SHAPES

EXTRUDED SHAPES
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COPPER

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MONEL-NICKEL

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INDUSTRIAL PRODUCTS

WEIGHTS

FOUNDRY • WELDING
BRAZING PRODUCTS

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6063-T42 RIGID CONDUIT

10 Foot Lengths

Threaded Both Ends, With One Coupling Furnished.

Trade Size (in inches)	Pounds per Lineal Foot*	Trade Size (in inches)	Pounds per Lineal Foot*
$\frac{1}{2}$	.298	2	1.288
$\frac{3}{4}$	.398	$2\frac{1}{2}$	2.047
1	.589	3	2.680
$1\frac{1}{4}$	.798	$3\frac{1}{2}$	3.213
$1\frac{1}{2}$	.956	4	3.821

*Weight includes coupling.

6061-T6 EQUAL ANGLES

15-25 Foot Random Lengths

Size (in inches)	Pounds Per Foot	Size (in inches)	Pounds Per Foot	Size (in inches)	Pounds Per Foot
$\frac{3}{4} \times \frac{3}{4} \times \frac{1}{8}$	.20	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{1}{8}$	.50	3×3	$\times \frac{3}{16}$ 1.29
$1 \times 1 \times \frac{1}{8}$	.27	$\times \frac{3}{16}$	.73	$\times \frac{1}{4}$	1.68
$\times \frac{3}{16}$	.40	$\times \frac{1}{4}$	.95	$\times \frac{5}{16}$	2.08
$\times \frac{1}{4}$	.51	$\times \frac{1}{8}$	.57	$\times \frac{3}{8}$	2.48
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	.35	$\times \frac{3}{16}$	.84	$*3\frac{1}{2} \times 3\frac{1}{2} \times \frac{5}{16}$	2.65
$\times \frac{3}{16}$	.51	$\times \frac{1}{4}$	1.11	4×4	$\times \frac{1}{4}$ 2.28
$\times \frac{1}{4}$	.66	$\times \frac{3}{8}$	1.60	$\times \frac{5}{16}$	2.82
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$	.43	$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{3}{16}$	1.07	$\times \frac{3}{8}$	3.36
$\times \frac{3}{16}$	.62	$\times \frac{1}{4}$	1.41		
$\times \frac{1}{4}$	.81	$\times \frac{5}{16}$	1.73		

*Extruded

6061-T6 UNEQUAL ANGLES

15-25 Foot Random Lengths

Size (in inches)	Pounds Per Foot	Size (in inches)	Pounds Per Foot	Size (in inches)	Pounds Per Foot
$1\frac{1}{2} \times 1\frac{1}{4} \times \frac{1}{8} *$	.39	$2 \times 1\frac{1}{2} \times \frac{1}{8}$	.49	3×2	$\times \frac{3}{16}$ 1.07
$\times \frac{3}{16} *$	.56	$\times \frac{3}{16}$	.73	$\times \frac{1}{4}$	1.40
$\times \frac{1}{4} *$	.74	$\times \frac{1}{4}$	.95	$\times \frac{3}{8}$	2.05
$1\frac{3}{4} \times 1\frac{1}{4} \times \frac{1}{8} *$.43	$2\frac{1}{2} \times 2$	$\times \frac{3}{16}$	$*3 \times 2\frac{1}{2} \times \frac{1}{4}$	1.53
$\times \frac{3}{16} *$.62	$\times \frac{1}{4}$	1.25	$*3\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$	1.68
$\times \frac{1}{4} *$.81	$\times \frac{5}{16}$	1.54	4×3	$\times \frac{1}{4}$ 1.99
				$\times \frac{3}{8}$	2.92
				6×4	$\times \frac{3}{8}$ 4.25

*Extruded

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STAINLESS STEEL

BRASS

STRUCTURAL SHAPES

EXTRUDED SHAPES
• CASTINGS

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6061-T6 CHANNELS

American Standard
15-25 Foot Random Lengths

Size in inches	Web Thick- ness	Width of Flange	Pounds Per Foot	Size in inches	Web Thick- ness	Width of Flange	Pounds Per Foot
3 X .170	.170	1.410	1.42	5 X .472	.472	2.032	3.97
.258	.258	1.498	1.73	6 X .225	.225	1.945	3.00
.356	.356	1.596	2.07	.314	.314	2.034	3.62
4 X .180	.180	1.580	1.84	.437	.437	2.157	4.49
.247	.247	1.647	2.15	7 X .230	.230	2.110	3.53
.320	.320	1.720	2.50	8 X .250	.250	2.290	4.25
5 X .190	.190	1.750	2.31	.487	.487	2.527	6.47
.325	.325	1.885	3.10				

6061-T6 I BEAMS

American Standard
15-25 Foot Random Lengths

Size in inches	Web Thick- ness	Width of Flange	Pounds Per Foot	Size in inches	Web Thick- ness	Width of Flange	Pounds Per Foot
3 X *.170	.170	2.330	1.96	5 X .210	.210	3.000	3.42
*.349	.349	2.509	2.59	.494	.494	3.284	5.09
4 X *.190	.190	2.660	2.64	6 X .230	.230	3.330	4.30
*.326	.326	2.796	3.28	.343	.343	3.443	5.09

*Extruded

6061-T6 H BEAMS

Extruded
15-25 Foot Random Lengths

Size in inches	Web Thick- ness	Width of Flange	Pounds Per Foot
4 X .313	.313	4.000	4.70

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6061-T6 TEES

Extruded

15-25 Foot Random Lengths

Size (in inches)	Pounds per Foot
*2 X 2 X 1/4	1.25
†1 1/2 X 1 1/4 X 1/4	.78

*This Tee has tapered stem and flanges.

†This Tee has uniform thickness in stem and flanges.

6061-T6 ZEES

Extruded

15-25 Foot Random Lengths

Size (in inches)	Pounds per Foot
3 X 1/4 X 2 11/16	2.33

EXTRUDED SHAPES

Die Num- ber	Alloy	Length (in Feet)	Pounds Per Foot	Approximate Shape	Accessories	Drawing Page Num- ber
10	6063-T42	16	.206	Counter Edge	—	61
63	6063-T42	16	.188	Tee (Divider Strip)	—	61
74A	6063-T42	16	.107	Belt Moulding	—	61
74B	6063-T42	16	.128	" "	—	61
74C	6063-T42	16	.086	" "	—	61
74D	6063-T42	16	.228	" "	—	61
74E	6063-T42	16	.192	" "	—	61
74F	6063-T42	16	.257	" "	—	61
74H	6063-T42	16	.137	" "	—	61
74P	6063-T42	16	.418	" "	—	61
74Q	6063-T42	16	.152	" "	—	61
78K	6062-T6	22	.106	Angle	—	61
79A	6063-T5	16	.206	"	—	62
79B	6063-T5	16	.408	"	—	62
79E	6063-T5	16	1.12	"	—	62
79G	6063-T5	16	.281	"	—	62
79H	6063-T5	16	.131	"	—	62
79M	6063-T5	16	.145	"	—	62
79N	6063-T5	16	.633	"	—	62
79O	6063-T5	16	.168	"	—	62
79P	6063-T5	16	.519	"	—	62
79Q	6063-T5	16	.856	"	—	62
79T	6063-T5	16	.356	"	—	62
79V	6063-T5	16	.431	"	—	62
79X	6063-T5	16	.581	"	—	62
79Y	6063-T5	16	.506	"	—	62
141	6063-T42	16	.431	Belt Moulding	—	61
251	6063-T42	16	.228	Glass Stop or Cove	—	61

Continued on next page

ALUMINUM

EXTRUDED SHAPES (Continued)

Die Number	Alloy	Length (in Feet)	Pounds Per Foot	Approximate Shape	Accessories	Drawing Page Number
363	6063-T42	16	.356	Belt Moulding		61
472	6063-T5	16	.108	Angle	|||||	62
510	6063-T42	16	.212	Belt Moulding	|||||	62
627	6063-T42	16	.184	Drip Moulding	|||||	62
650	6063-T42	16	.191	Belt Moulding	|||||	62
661	6063-T42	16	.168	Quarter Oval	|||||	62
668	6063-T42	16	.307	Drip Moulding	|||||	63
771C	6062-T6	22	.938	Zee	|||||	63
787	6063-T42	16	.433	Corner	|||||	63
853-B	6062-T6	22	.450	Tee	|||||	63
853-F	6062-T6	22	.320	"	|||||	63
853-G	6062-T6	22	.890	"	|||||	63
853-K	6062-T6	22	.700	"	|||||	63
853-N	6062-T6	22	.628	"	|||||	63
892	6062-T6	22	1.67	Channel	|||||	63
895	6063-T5	16	.244	Angle	|||||	62
1001	6063-T42	16	.174	Belt Moulding	|||||	64
1122	6063-T42	16	.558	Belt Moulding	|||||	64
1257	6063-T5	16	.319	Tee	|||||	63
1312	6063-T5	16	.070	Angle	|||||	62
1445	6063-T42	16	.093	Counter Edge	|||||	64
1843	6063-T42	16	.058	Crescent	|||||	64
1940	6063-T5	20	.263	Channel	|||||	64
1943	6063-T5	16	.158	Angle	|||||	62
1944	6063-T5	16	.116	"	|||||	62
2105	6063-T5	16	.450	Channel	|||||	64
2296	6062-T6	24	1.03	"	|||||	65
2335	6063-T5	16	.150	"	|||||	64
2372	6063-T5	16	.473	Pilaster	|||||	65
2388	6063-T5	16	.413	Channel	|||||	64
2715	6063-T5	16	.187	"	|||||	64
2748	6063-T5	16	.563	"	|||||	64
2749	6063-T5	16	.148	"	|||||	64
2880	6063-T6	16	1.11	Angle — Corner Post	|||||	62
3164	6063-T5	16	.902	Pilaster	|||||	65
3507	6063-T5	20	.251	Channel	|||||	64
3513	6063-T5	16	.596	Corner Trim	|||||	65
3514	6063-T5	16	.830	" "	|||||	65
3547	6063-T5	16	.300	Channel	|||||	64
3616	6063-T5	16	1.18	Trim	|||||	65
3619	6063-T5	16	.120	Channel	|||||	65
3636	6063-T5	16	1.82	Pilaster	|||||	65
3728	6063-T5	16	1.16	Door Frame	|||||	66
3776	6063-T5	16	.713	Channel	|||||	64
4286	6063-T5	20	.300	"	|||||	64
4300	6063-T5	20	.337	"	|||||	64
4308	6063-T5	16	.248	Glass Stop	|||||	66
4477	6063-T5	16	.228	Semi-Hollow Trim	|||||	66
4490	6063-T5	16	.954	Base Mold	|||||	66
4533	6063-T5	16	.244	Channel	|||||	64
4542	6063-T5	16	.526	"	|||||	64
4619	6062-T6	24	1.16	Rub Rail	|||||	66
4716	6063-T5	16	.280	Tee	|||||	63
5137	6063-T5	16	.319	Angle	|||||	62
5389	6063-T5	16	.431	Door Frame	|||||	66
5390	6063-T5	16	.528	Glass Frame	|||||	66
5391	6063-T5	16	.209	" "	|||||	67
5392	6063-T5	16	.438	Door Frame	|||||	67
5393	6063-T5	16	.431	" "	|||||	67
5527	6063-T5	20	.564	Channel	|||||	64
5714	6063-T5	16	.524	Channel	|||||	64
5951	6063-T5	16	.300	Tee	|||||	63
6474	6063-T5	16	.135	Glass Frame	|||||	67
6498	6063-T5	16	1.36	Door Frame	|||||	67
6594	6063-T5	16	.563	Channel	|||||	64

Continued on next page

STAINLESS STEEL

BRASS

EXTRUDED SHAPES • CASTINGS

COPPER

ALUMINUM

EXTRUDED SHAPES (Continued)

Die Number	Alloy	Length (in Feet)	Pounds Per Foot	Approximate Shape	Accessories	Drawing Page Number
6699	6063-T6	24	.788	H Beam	—	67
6746	6063-T5	16	.694	Angle	—	62
6801	6063-T5	16	.488	Column Post	—	67
6844	6063-T5	16	.431	Angle	—	62
7030	6063-T5	16	.328	Tee	—	63
7032	6063-T5	16½	1.80	Threshold	—	67
7088	6062-T6	22	1.02	Zee	—	68
7201	6063-T5	16	.206	Angle	—	62
7385	6063-T5	16	.244	"	—	62
7484	6063-T5	16	.413	Channel	—	64
7498	6063-T5	22	2.39	Vault Moulding	—	68
7499	6063-T5	22	2.95	"	—	68
7613	6063-T5	16	.356	Angle	—	62
7648	6063-T5	16	1.35	Door Frame	—	68
8321	6063-T5	16	.365	Trim	—	68
8449	6063-T5	16	.374	Channel	—	64
8467	6063-T5	16	.806	Pilaster	—	68
8604	6062-T6	22	1.16	Side Post	—	68
8606	6062-T6	22	.797	Roof Bow	—	69
8792	6063-T5	16	1.31	Door Frame	—	64
8997	6063-T5	16	.263	Channel	—	64
9004	6062-T6	24	.533	"	—	69
9418	6063-T5	16	1.18	Vault Moulding	—	69
9419	6063-T5	16	.925	"	—	69
9553	6063-T5	16	.674	Trim	—	69
10346	6063-T5	16½	.180	Threshold	—	69
10347	6063-T5	16½	.232	"	—	69
10351	6063-T5	16½	.476	Saddle	—	70
10352	6063-T5	16½	.894	"	—	70
10353	6063-T5	16½	.595	Threshold	—	70
10758	6062-T6	22	.369	Slat	—	70
12919	6063-T5	16	.274	Glass Stop	—	70
16505	6063-T5	20	.852	Handrail	Use Bracket 303-B, Scroll 16505-S, Channel Scroll 16505-C, Terminal End 16505-E.	70
Milik						
YOrk						
Dir. I						
TWX						
17146	6063-T5	16	1.94	Channel	—	64
18307	6063-T5	16	.206	Tee	—	63
18308	6063-T5	16	.224	"	—	63
18906	6063-T5	16	.394	"	—	63
19047	6063-T5	16½	.829	Saddle	—	70
19048	6063-T5	16½	1.10	"	—	70
19049	6063-T5	16½	1.23	"	—	70
20609	6063-T5	20	.770	Handrail	Use Bracket 302-B, Scroll 20609-S, Channel Scroll 20609-C, Terminal End 20609-E, Lambs Tongue 20609-L.	71
1000 S						
HUm						
Dir. I						
TWX						
CAMI						
281 A						
TRow						
Dir. D						
TWX-61						
PHILAD						
1955 W.						
Baldwin						
Dir. Dist						
TWX-21						
20999	6063-T5	16½	.661	Threshold	—	71
22266	6063-T5	20	.360	Channel	—	64
22819	6062-T6	24	1.29	Channel	—	71
23681	6063-T5	20	.690	Handrail	Use Bracket 302-B	71
23787	6063-T5	16	.319	Zee	—	71
24531	6062-T6	24	.898	Side Post	—	71
25055	6063-T5	16	.281	Tee	—	63
25300	6063-T5	20	.694	Handrail	Use Bracket 302-B	71
26593	6063-T42	20	.720	Window Stool	—	71
26638	6063-T5	16½	1.78	Saddle	—	70
26936	6063-T6	22	.064	Snapsmold	—	71
26937	6063-T6	22	.040	"	—	72
34040	6063-T5	17	5.64	Hollow 3 Trim	—	72
34096	6063-T5	16	5.87	Newell Hollow 2	—	72

Continued on next page

ALUMINUM

EXTRUDED SHAPES (Continued)

Die Number	Alloy	Length (in Feet)	Pounds Per Foot	Approximate Shape	Accessories	Drawing Page Number
37734	6063-T42	21	.524	Window Sill	—	72
37735	6063-T42	21	.574	" "	—	72
37736	6063-T42	21	.636	" "	—	72
37737	6063-T42	21	.691	" "	—	72
37738	6063-T42	21	.746	" "	—	72
37739	6063-T42	21	.804	" "	—	72
38649	6063-T5	16½	.689	Threshold	—	70
38651	6063-T5	16½	.721	Saddle	—	70
38653	6063-T5	16½	.194	Threshold	—	69
38654	6063-T5	16½	.224	"	—	69
38658	6063-T5	16½	.760	"	—	71
39258	6063-T42	½	1.12	Semi-Hollow Cover Plate	See Section Assembly, Page 59.	73
39259	6063-T42	9—11½	.978	Gravel Stop	See Section Assembly, Page 59.	73
40517	6062-T6	22	.787	Channel	—	64
42058	6063-T42	9—11½	.838	Gravel Stop	See Section Assembly, Page 59.	73
42059	6063-T42	9—11½	.697	" "	See Section Assembly, Page 59.	73
42060	6063-T42	½	1.48	Semi-Hollow Cover Plate	—	73
42061	6063-T42	½	1.002	" " "	—	73
42062	6063-T42	½	.826	" " "	—	73
42063	6063-T42	9—11½	1.315	Gravel Stop	See Section Assembly, Page 59.	73
45872	6062-T6	22-24-26	1.25	Side Sill	—	73
45873	6063-T6	22-24-26	.499	Lintel	—	73
45874	6062-T6	22-24-26	1.57	Roof Rail	Use Corner Casting 45874-B, 45874-S, 45874-R.	74
45875	6062-T6	16	1.39	Corner Post	—	74
45876	6062-T6	24	.498	Side Post	—	74
45877	6063-T6	16	.424	Rub Rail	—	74
45878	6063-T6	22-24-26	.517	Lintel	—	74
45879	6062-T6	24	.760	Door Post	—	74
54603	6063-T6	16	.784	Side Post	—	74
54684	6063-T42	21	.767	Window Sill	—	75
54685	6063-T42	21	.842	" "	—	75
54686	6063-T42	21	.919	" "	—	75
54687	6063-T42	21	.994	" "	—	75
54688	6063-T42	21	1.07	" "	—	75
54689	6063-T42	21	1.14	" "	Use Anchor Clip SA-100	75
54690	6063-T42	21	1.53	" "	—	75
54691	6063-T42	21	1.72	" "	—	75
54692	6063-T42	21	2.19	" "	—	75
54693	6063-T42	21	2.41	" "	—	75
58219	6063-T5	16	.096	End Stop	—	75
58221	6063-T5	16	.624	Plaster Stop	—	75
58222	6063-T5	16	.385	Anchor	—	75
58229	6063-T5	16	.437	Picture Mold	—	75
58391	6063-T5	16	.604	Corner Trim	—	75
60585	6063-T5	16½	.740	Threshold	—	76
60586	6063-T5	16½	1.01	"	—	76
60587	6063-T5	16½	1.18	"	—	76
60588	6063-T5	16½	1.35	Threshold	—	76
64016	6063-T5	16	1.060	Fascia	—	76
64097	6063-T5	16	1.208	Fascia	—	76
66293	6063-T5	20	.614	Handrail	Use Bracket 301-B	77
66294	6063-T5	20	.716	"	Use Bracket 301-B	77
66295	6063-T5	20	.835	Handrail Coping	—	77
66582	6063-T6	16	.923			77

Continued on next page

STAINLESS STEEL

BRASS

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

ALUMINUM

EXTRUDED SHAPES (Continued)

Die Number	Alloy	Length (in Feet)	Pounds Per Foot	Approximate Shape	Accessories	Drawing Page Number
66588	6063-T42	9'11½"	.930	Gravel Stop	See Section Assembly, Page 59.	73
66589	6063-T42	½	1.144	Cover Plate	—	73
66611	6063-T42	9'10½"	2.412	Coping G-8	See Section Assembly, Page 59.	77
68755	6063-T42	9'11½"	1.606	Gravel Stop	See Section Assembly, Page 59.	77
69177	6063-T42	9'10½"	3.702	Coping G-12	See Section Assembly, Page 59.	77
70421	6063-T5	16	.194	Drip Mold	—	78
70422	6063-T5	16	.947	Picture Mold	Use Snap-on Clip SC-201.	78
70423	6063-T5	16	.802	" "	Use Snap-on Clip SC-201.	78
70424	6063-T5	16	.613	Base Mold	Use Snap-on Clip SC-201.	78
70425	6063-T5	16	.209	Wall Trim	Use Snap-on Clip SC-202.	78
70426	6063-T5	16	.186	Trim	Use Snap-on Clip SC-202.	78
77563	6063-T5	16	.098	End Stop Anchor	—	78
77564	6063-T5	16	.108	Fascia End Stop	—	78
79587	6063-T42	9'11½"	.468	Flashing Cap	—	79
79588	6063-T42	9'11½"	1.387	Gravel Stop Type EE	See Section Assembly, Page 59.	79
79589	6063-T42	9'11½"	.316	Fascia	—	79
79590	6063-T42	9'11½"	.443	Soffit Trim	—	79
79591	6063-T42	9'11½"	1.126	Gravel Stop Type FF	See Section Assembly, Page 59.	79
79592	6063-T42	9'11½"	1.129	" " "	—	80
79800	6063-T6	30-32-35	1.962	Reefer Flooring	—	80
79801	6063-T6	30-32-35	1.830	" "	—	80
79802	6063-T42	30-32-35	1.152	Edge Finisher	—	80
79803	6063-T42	30-32-35	1.560	Edge Starter	—	81
79804	6063-T6	30-32-35	.794	Center Starter	—	81
79805	6063-T6	30-32-35	2.176	Dry Freight Flooring	—	81
79806	6063-T6	30-32-35	.752	Center Starter	—	81
79840	6063-T5	21'1"	1.724	Mullions or Frames	Chanel 1940 Suggested	81
79841	6063-T5	21'1"	1.800	" " "	Glass stop with these shapes	81
84701	6063-T5	16	.590	Cove Base	Use Snap-On Clip SC-201	81
84702	6063-T5	16	.312	Multipurpose Trim	Use Snap-On Clip SC-202	82
84781	6063-T5	16	.211	Threshold Miter Strip	—	82
84782	6063-T5	16¼	.630	Type H Threshold 4"	—	82
84783	6063-T5	16¼	.804	" " " 5"	—	82
84784	6063-T5	16¼	.988	" " " 6"	—	82
84785	6063-T5	16¼	1.127	" " " 7"	—	82
84968	6063-T42	9'11½"	1.315	Gravel Stop, Type F	See Section Assembly, Page 59.	73
84969	6063-T42	½	1.578	Joint Cover	—	73
87066	6063-T5	16	.820	Fascia	—	82
87067	6063-T5	20	.446	Handrail	Mating Channel 1940	83
87068	6063-T5	20	.871	Handrail	Mating Channel 87071	83
87069	6063-T5	16	.341	Tee	—	83
87070	6063-T5	16	.209	Angle	—	62
87071	6063-T5	20	.374	Channel	—	64
87095	6063-T42	½	1.142	Joint Cover	—	73
87096	6063-T42	9'11½"	.978	Gravel Stop Type F	See Section Assembly, Page 59.	73
87097	6063-T42	9'11½"	.696	Gravel Stop Type F	See Section Assembly, Page 59.	73
87098	6063-T42	½	.860	Joint Cover	—	73

Continued on next page

ALUMINUM

EXTRUDED SHAPES (Continued)

Die Number	Alloy	Length (in Feet)	Pounds Per Foot	Approximate Shape	Accessories	Drawing Page Number
90503	6063-T5	20'	.980	Hand Rail	(see 16505)	83
111291	6063-T42	9'11½"	1.853	Gravel Stop, Type H	See Section Assemblies, Page 59.	83
111301	6063-T42	½	1.26	Joint Cover	—	83
112331	6063-T42	9'11½"	1.811	Gravel Stop, Type F	See Section Assemblies, Page 59.	84
117861	6063-T42	9'11½"	1.445	" " " H	See Section Assemblies, Page 59.	84
117871	6063-T42	½	1.004	Joint Cover	—	84
125571	6063-T42	½	2.516	" "	—	84
132562	6063-T42	9'11½"	.661	Fascia	—	59
132572	6063-T42	9'11½"	.445	Soffit Trim	—	84

SECTION ASSEMBLIES

GRAVEL STOPS — COPINGS & ACCESSORIES

Section	Gravel Stop	Joint Cover	Fascia	Soffit	Outside Corner	Inside Corner	Anchor Plate
TYPE F							
39259	39259	39258	—	—	15092	15093	—
42058	42058	42061	—	—	15096	15087	—
42059	42059	42062	—	—	15098	15089	—
42063	42063	42060	—	—	15090	15091	—
66588	66588	66589	—	—	15094	15095	—
84968	84968	84969	—	—	15485	15484	—
87096	87096	87095	—	—	15483	15482	—
87097	87097	87098	—	—	15481	15480	—
112331	112331	125571	—	—	15497	15496	—
TYPE E							
68755*	68755	15045	—	—	15021	15020	15088
TYPE EE							
79587-8**	79588	15354	79589	79590	15391	15390	15355
TYPE FF							
79591	79591	15358	79589	79590	15357	15356	—
79592	79592	15361	79589	79590	15360	15359	—
TYPE H							
117861	117861	117871	132562	132572	15503	15502	—
111291	111291	111301	132562	132572	15505	15504	—
COPING							
TYPE G 8							
66611†	66611	15022	—	—	15065	15064	15108
TYPE G 12							
69177††	69177	15023	—	—	15067	15066	15122

*Include 15086 Pitch Dam

** " 79587 Flashing Cap

† " 15040 Gutter Bar

†† " 15038 Gutter Bar

STAINLESS STEEL

BRASS

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BRAZING PRODUCTS

ALUMINUM

ALUMINUM

M
M
S
G
YOU
SERV
YOU
META

NEW Y
WOrth
P. O. Bo

CARTE
P. O. Bo
Milik St
YOrktov
Dir. Dis
TWX-20

HARRI
1000 So
Humboldt
Dir. Dis
TWX-20

CAMBE
281 Alba
TRowbr
Dir. Dist
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

HANDRAIL CASTINGS

(For Die Drawings,
See Pages 85-86)

Die Number	Description
301-B	BRACKET FOR HANDRAILS UNDER 2" WIDE
302-B	BRACKET FOR HANDRAILS OVER 2" WIDE
303-B (16505-B)	BRACKET FOR HANDRAIL DIE 16505 AND OTHER RAILS OVER 2" WIDE
16505-CR	CHANNEL SCROLL
20609-C	CHANNEL SCROLL
66294-C	CHANNEL SCROLL
16505-ER (16505-RE)	TERMINAL END
20609-E	TERMINAL END
66294-E	TERMINAL END
20609-L	LAMBS TONGUE
66294-L	LAMBS TONGUE
16505-SR	SCROLL LEFT OR RIGHT
20609-S	SCROLL LEFT OR RIGHT
66294-S	SCROLL LEFT OR RIGHT

TRUCK BODY CASTINGS

356-T6 Alloy
(For Die Drawings,
See Page 86)

Die Number	Description
16-B-48	CORNER CASTINGS FOR DIE 9006
45873	LINTEL CORNER CASTING FOR DIE 45873
45874-B	BALL CORNER CASTING
45874-S	SQUARE CORNER CASTING
14007	CORNER CASTING FOR DIE 14007
45874-R	CORNER CASTING FOR DIE 45874

CLIPS

(For Die Drawings,
See Page 86)

Die Number	Description
SC-201	STEEL SPRING CLIPS FOR DIES 70422-70423-70424
SC-202	STEEL SPRING CLIPS FOR DIES 8321-70425-70426
SA-100	WINDOW SILL CLIP FOR DIES 54684- THRU 54693

ALUMINUM

COUNTER EDGE	10	TEE (Divider Strip)	63		
EST. WT. PER FT.—.206 LBS. FACTOR 17			EST. WT. PER FT.—.188 LBS. FACTOR 16		

Section number	A	B	C	r ¹	r ²	Est. weight per foot	Factor
74C	0.188	0.500	0.019	0.500	0.188	0.086	14
74A	0.188	0.625	0.019	0.625	0.188	0.107	14
74B	0.188	0.750	0.020	0.750	0.188	0.128	13
74H	0.188	0.875	0.019	0.875	0.188	0.137	14
74Q	0.188	1.000	0.020	1.000	0.188	0.152	13
74E	0.250	0.875	0.025	0.875	0.250	0.192	10
74D	0.250	1.000	0.025	1.250	0.203	0.228	10
74F	0.250	1.250	0.025	1.250	0.250	0.257	10
74P	0.250	2.000	0.025	4.000	0.250	0.418	9

ANGLE	78K	BELT MOLDING	141		
EST. WT. PER FT.—.106 LBS. FACTOR 27			EST. WT. PER FT.—.431 LBS. FACTOR 8		

GLASS STOP OR CORNER COVE	251	BELT MOLDING	368		
EST. WT. PER FT.—.226 LBS. FACTOR 10			EST. WT. PER FT.—.356 LB. FACTOR 9		

STAINLESS STEEL

BRASS

COPPER

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BRAZING PRODUCTS

ALUMINUM

ALUMINUM

YOU
SERV
YOU
MET

NEW

WOrth
P. O.

CART

P. O.

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Dir. D

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CAME

281 All

TRowl

Dir. D

TWX-6

PHILAD

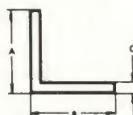
1955 W.

Baldwin

Dir. Dis

TWX-21

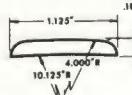
ANGLES—EQUAL AND UNEQUAL LEGS, SHARP CORNERS



Section number	A inches	B inches	C inches	Est. weight per foot, pounds	Factor
1944	0.375	0.750	0.094	0.116	19
1312	0.500	0.500	0.062	0.070	28
79-H	0.500	0.500	0.125	0.131	15
1943	0.500	1.000	0.094	0.158	19
7201	0.500	1.000	0.125	0.206	15
895	0.500	1.250	0.125	0.244	14
79-O	0.695	0.625	0.125	0.168	15
472	0.750	0.750	0.062	0.108	28
79-A	0.750	0.750	0.125	0.206	14
7385	0.750	1.000	0.125	0.244	14
5137	0.750	1.500	0.125	0.319	14
79-M	1.000	1.000	0.062	0.145	28
79-G	1.000	1.000	0.125	0.281	14
79-B	1.000	1.000	0.188	0.408	10
7613	1.000	1.500	0.125	0.356	14
87070	1.375	0.875	*	0.209	25
6844	1.000	2.000	0.125	0.431	14
79-T	1.250	1.250	0.125	0.356	14
79-P	1.250	1.250	0.188	0.519	10
6746	1.250	3.500	0.125	0.694	14
79-V	1.500	1.500	0.125	0.431	14
79-N	1.500	1.500	0.188	0.633	9
79-Y	1.750	1.750	0.125	0.506	14
79-X	2.000	2.000	0.125	0.581	14
79-O	2.000	2.000	0.188	0.857	9
79-E	2.000	2.000	0.925	1.194	7
2880 (6063-T6)	2.250	2.250	0.125	1.106	14

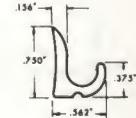
*Long leg is .062" thick; short leg is .081" thick.

BELT MOLDING 510



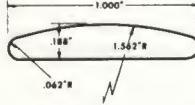
EST. WT. PER FT.—.212 LB.
FACTOR 12

DRIP MOLDING 627



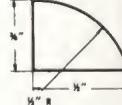
EST. WT. PER FT.—.184 LB.
FACTOR 15

BELT MOLDING 650



EST. WT. PER FT.—.191 LB.
FACTOR 11

QUARTER OVAL 661



EST. WT. PER FT.—.168 LB.
FACTOR 9

ALUMINUM

STAINLESS STEEL

SHEET • PLATE

ROD • SHAPES • WIRE

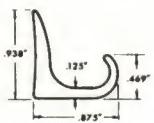
MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS

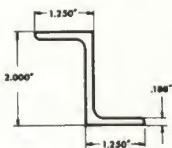
COPPER

Drip Molding 668



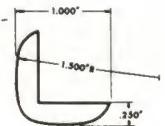
EST. WT. PER FT.—307 LB.
FACTOR 13

ZEE 771C



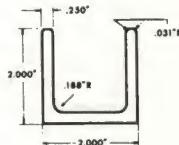
EST. WT. PER FT.—938 LB.
FACTOR 9

Corner Nosing 787



EST. WT. PER FT.—436 LB.
FACTOR 8

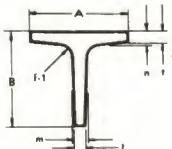
CHANNEL 892



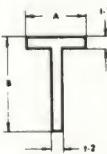
EST. WT. PER FT.—1,667 LB.
FACTOR 7

TEES—TAPER STEM AND FLANGES,
ROUNDED ANGLES, SHARP CORNERS

Section number	A, inches	B, inches	t, inch	n, inch	m, inch	t-1, inch	Est. weight per foot, pounds	Factor
853-F	1	1	1/8	1/2	3/16	1/8	320	12
853-B	1 1/2	1 1/4	1/8	1/2	3/16	1/8	450	12
853-N	1 1/2	1 1/4	3/16	1/2	3/16	1/8	628	8
853-K	1 1/2	1 1/2	3/16	1/2	3/16	3/16	.700	7
853-G	1 1/2	1 1/2	+ 1/8	1/2	3/16	3/16	890	6



TEES—SHARP ANGLES,
SHARP CORNERS



Section number	A, inches	B, inches	t-1, inches	t-2, inches	Est. weight per foot, pounds	Factor
18307	3/4	3/4	1/8	1/8	206	15
4716	3/4	1 1/4	1/8	1/8	280	14
7030	7/8	1 1/4	3/16	1/8	328	13
1257	1	1 1/2	1/8	3/16	319	9
18308	1	3/4	1/8	1/8	244	14
25055	1	1	1/8	1/8	281	14
5951	1 1/4	3/4	1/8	1/8	300	14
18906	2	3/4	1/8	1/8	394	14

ALUMINUM

ALUMINUM

YOU
SER
YOU
MET

NEW
WOrt
P. O.

CART
P. O.
Milik
YOrkt
Dir. D
TWX-

HARF
1000 S
Humb
Dir. D
TWX-

CAMB
281 Al
TRowl
Dir. D
TWX-61

PHILAD
1955 W. F
BALDWIN
Dir. Dist.
TWX-215

BELT MOLDING 1001	BELT MOLDING 1122				
EST. WT. PER FT.—.174 LB. FACTOR 11	EST. WT. PER FT.—.550 LB. FACTOR 8				
COUNTER EDGE 1445	CRESCENT 1843				
EST. WT. PER FT.—.093 LBS. FACTOR 31	EST. WT. PER FT.—.058 LBS. FACTOR 27				
CHANNELS, SHARP CORNERS					
Section number	A inches	B inches	C inches	Est. weight per foot, pounds	Factor
2335	0.500	0.375	0.125	0.150	15
2149	0.500	0.500	0.094	0.148	19
8977	0.500	0.750	0.125	0.263	14
4533	0.625	0.625	0.125	0.244	14
2715	0.750	0.375	0.125	0.187	15
3547	0.750	0.750	0.125	0.300	14
1940	1.000	0.500	0.125	0.263	14
7484	1.000	1.000	0.125	0.413	— 14
4286	1.250	0.500	0.125	0.300	14
87071	1.250	0.750	0.125	0.374	14
4542	1.250	1.250	0.125	0.596	14
13307	1.438	0.500	0.094	0.251	19
4300	1.500	0.500	0.125	0.337	14
8449	1.750	0.500	0.125	0.374	14
2105	1.750	0.750	0.125	0.450	14
5714	1.750	1.000	0.125	0.524	14
2388	2.000	0.500	0.125	0.413	14
5527	2.000	1.000	0.125	0.564	14
92266	2.100	0.550	0.100	0.360	17
2748	2.250	0.875	0.125	0.563	14
40517 (6062-T6)	2.500	1.500	0.125	0.787	14
6594	3.000	0.500	0.125	0.563	14
3776	3.000	1.000	0.125	0.713	14
17146	5.000	2.000	0.188	1.940	9
① 90 ft. lengths.					
② 22 ft. lengths.					

ALUMINUM

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

BONDERY
WELDING
BRAZING
PRODUCTS

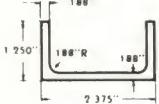
STAINLESS STEEL

BRASS

COPPER

CHANNEL

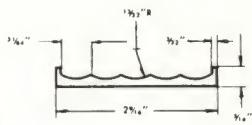
2296



EST. WT. PER FT.—1.031 LB.
FACTOR 9

PILASTER

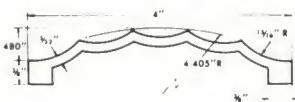
2372



EST. WT. PER FT.—473.185
FACTOR 13

PILASTER

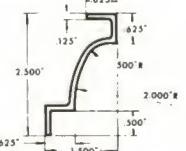
3164



EST. WT. PER FT.—902 LB.
FACTOR 11

CORNER TRIM

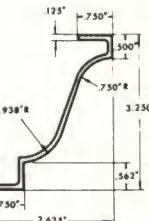
3513



EST. WT. PER FT.—596 LB.
FACTOR 14

CORNER TRIM

3514



EST. WT. PER FT.—830 LB.
FACTOR 13

TRIM

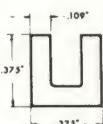
3616



EST. WT. PER FT.—1.181 LB.
FACTOR 12

CHANNEL

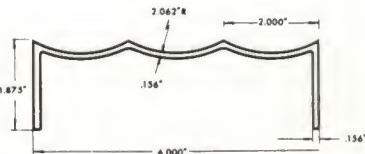
3619



EST. WT. PER FT.—120 LB.
FACTOR 17

PILASTER

3636



EST. WT. PER FT.—1.816 LB.
FACTOR 11

ALUMINUM

ALUMINUM

M
S
C
YOU
SERV
YOU
META

NEW
Worth
P. O. F

CART
P. O. F
Milik S
YOrkto
Dir. D
TWX-7

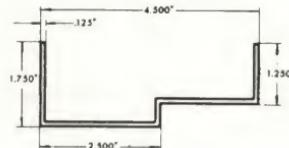
HARR
1000 S
Humb
Dir. D
TWX-2

CAMB
281 All
TRowl
Dir. Dis
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

DOOR FRAME

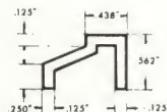
3728



EST. WT. PER FT.—1.163 LB.
FACTOR 14

GLASS STOP

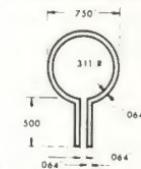
4308



EST. WT. PER FT.—.246 LB.
FACTOR 15

SEMI-HOLLOW TRIM or PANEL EDGING

4477



EST. WT. PER FT.—.228 LB.
FACTOR 26 SEMI-HOLLOW

BASE MOLD

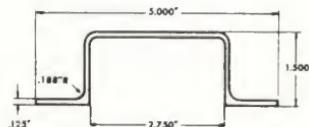
4490



EST. WT. PER FT.—.954 LB.
FACTOR 14

RUB RAIL

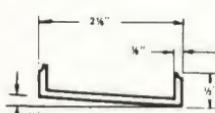
4619



EST. WT. PER FT.—1.157 LB.
FACTOR 13

DOOR FRAME

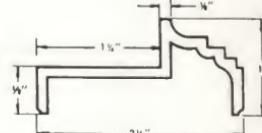
5389



EST. WT. PER FT.—.431 LB.
FACTOR 14

GLASS FRAME

5398



EST. WT. PER FT.—.528 LB.
FACTOR 14

ALUMINUM

SHEET • PLATE

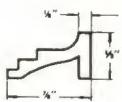
ROD • SHAPES • WIRE

WEIGHTS

FOUNDRY • WELDING
BRAZING PRODUCTS

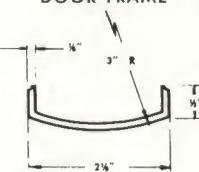
STAINLESS STEEL

GLASS FRAME 5391



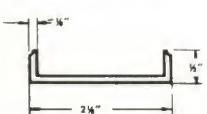
EST. WT. PER FT.—209 LBS.
FACTOR 14

DOOR FRAME 5392



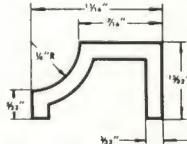
EST. WT. PER FT.—438 LBS.
FACTOR 14

DOOR FRAME 5393



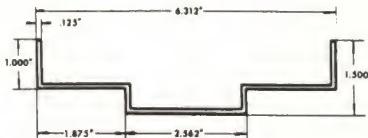
EST. WT. PER FT.—431 LBS.
FACTOR 14

GLASS FRAME 6474



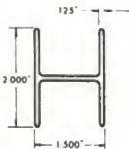
EST. WT. PER FT.—135 LBS.
FACTOR 19

DOOR FRAME 6498



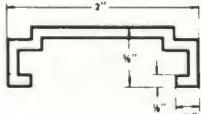
EST. WT. PER FT.—1,359 LBS.
FACTOR 14

H BEAM 6699



EST. WT. PER FT.—788 LBS.
FACTOR 13

COLUMN POST 6801

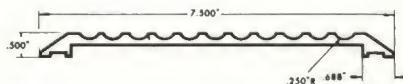


EST. WT. PER FT.—488 LBS.
FACTOR 14

TYPE W

THRESHOLD

7032



EST. WT. PER FT.—1,798 LBS.
FACTOR 10

COPPER

ALUMINUM

ALUMINUM

YOU
SER
YOU
MET

NEW
WOrt
P. O.

CAR
P. O.
Milik
YOrk
Dir. I
TWX

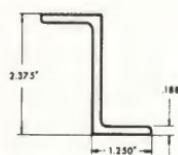
HAR
1000
HUm
Dir. I
TWX

CAM
281 A
TRow
Dir. D
TWX-6

PHILA
1955 W.
BALdwi
Dir. Dis
TWX-2

ZEE

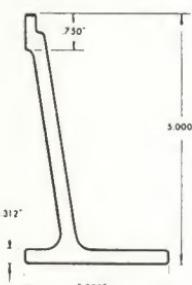
7088



VAULT MOLDING

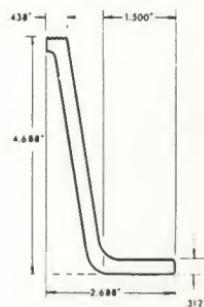
7498

— 250"



VAULT MOLDING

7498



TRIM

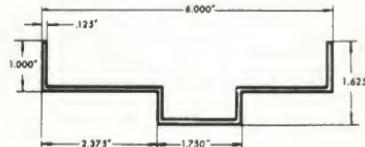
8321

EST. WT. PER FT.—2.952 LB.
FACTOR 9

EST. WT. PER FT.—3.65 LBS.
FACTOR 16

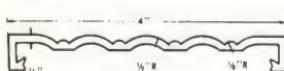
DOOR FRAME

7648



PILASTER

8467



SIDE POST

8604

EST. WT. PER FT.—1.163 LB.
FACTOR 13

ALUMINUM

ROOF BOW	8606	CHANNEL	9004	
DOOR FRAME			8792	
		EST. WT. PER FT.—1.313 LBS. FACTOR 14		
VAULT MOLDING	9418	VAULT MOLDING	9419	
EST. WT. PER FT.—1.181 LB. FACTOR 11		EST. WT. PER FT.—.925 LB. FACTOR 9		
TRIM	9553	THRESHOLDS TYPE F		
EST. WT. PER FT.—.674 LB. FACTOR 10				
Section number	A	B	Est. weight per foot, pounds	Factor
10346	1 1/4	1 7/16	.180	16
38653	1 3/8	1 7/16	.194	18
10347	1 1/2	1 7/16	.232	16
38654	1 5/8	1 7/16	.224	18

STAINLESS STEEL

BRASS

COPPER

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

SHEET • PLATE ROD • SHAPES • WIRE

ALUMINUM

ALUMINUM
M
M
S
G
YOU
SERV
YOU
MET

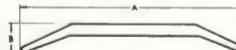
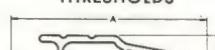
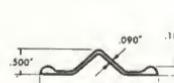
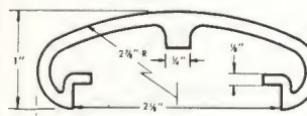
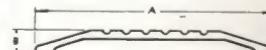
NEW
Worth
P. O.

CART
P. O.
Milik
YOrkt
Dir. D
TWX-

HARR
1000 S
Humb
Dir. D
TWX-

CAME
281 Al
TRow
Dir. Dis
TWX-61'

PHILAD
1955 W. I
BALdwin
Dir. Dist
TWX-215

SADDLES		TYPE C		
				
Section number	A	B	Est. weight per foot, pounds	
10351	3	1/4	.476	
10352	4 5/8	1/2	.894	
THRESHOLDS		TYPE D		
				
Section number	A	B	Est. weight per foot, pounds	
10353	3 1/2	1/4	.595	
38649	4 1/4	1/4	.689	
SLAT		10758	GLASS STOP	
				
EST. WT. PER FT.—369 LB. FACTOR 16			EST. WT. PER FT.—274 LB. FACTOR 17	
HANDRAIL		16505	THRESHOLDS AND SADDLES	
				
EST. WT. PER FT.—852 LBS. FACTOR—12				
Section number	A	B	Est. weight per foot, pounds	Factor
38651	3	1/2	.721	10
19047	4	1/2	.829	11
19048	5	1/2	1.102	10
19049	6	1/2	1.226	11
26638	7	1/2	1.777	9

ALUMINUM

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

STAINLESS STEEL

BRASS

COPPER

HANDRAIL 20609	CHANNEL 22819															
<p>EST. WT. PER FT.—.770 LB. FACTOR 6</p>	<p>EST. WT. PER FT.—1.286 LB. FACTOR 10</p>															
THRESHOLDS	TYPE E															
<table border="1"> <thead> <tr> <th>Section number</th><th>A</th><th>B</th><th>Est. weight per foot, pounds</th><th>Factor</th></tr> </thead> <tbody> <tr> <td>20999</td><td>3 1/2</td><td>7/8</td><td>661</td><td>17</td></tr> <tr> <td>38658</td><td>4 1/4</td><td>7/8</td><td>760</td><td>16</td></tr> </tbody> </table>	Section number	A	B	Est. weight per foot, pounds	Factor	20999	3 1/2	7/8	661	17	38658	4 1/4	7/8	760	16	
Section number	A	B	Est. weight per foot, pounds	Factor												
20999	3 1/2	7/8	661	17												
38658	4 1/4	7/8	760	16												
HANDRAIL 23681	ZEE 23787															
<p>EST. WT. PER FT.—.690 LB. FACTOR 10</p>	<p>EST. WT. PER FT.—.319 LB. FACTOR 14</p>															
SIDE POST 24531	HANDRAIL 25300															
<p>EST. WT. PER FT.—.898 LB. FACTOR 15</p>	<p>EST. WT. PER FT.—.677 LB. FACTOR 15</p>															
WINDOW STOOL 26593	SNAPMOLD 26936															
<p>EST. WT. PER FT.—.720 LB. FACTOR 18</p>	<p>EST. WT. PER FT.—.064 LB. FACTOR 36</p>															

ALUMINUM

ALUMINUM

YOU
SER'
YOU
MET.

NEW
WOrth
P. O. I

CART
P. O. I
Milik S
YOrkt
Dir. D
TWX-

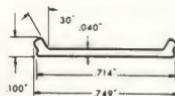
HARF
1000 S
Humb
Dir. D
TWX-

CAME
281 Al
TRowl
Dir. Du
TWX-6

PHILA
1955 W.
BALdwin
Dir. Dis
TWX-2

SNAPMOLD

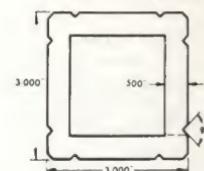
26937



EST. WT. PER FT.—.040 LB.
FACTOR 41

NEWELL HOLLOW 2

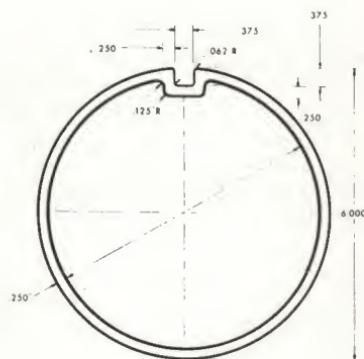
34096



EST. WT. PER FT.—5.875 LB.
FACTOR 3 (CLASS 2—HOLLOW)

HOLLOW 3 TRIM

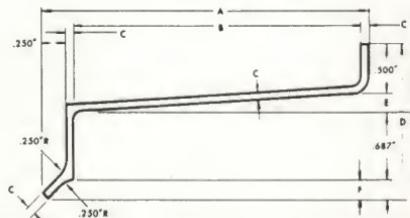
34040



EST. WT. PER FT.—3.641 LB.
FACTOR 7 (CLASS 3 HOLLOW)

WINDOW SILLS

TYPE C



Section number	A	B	C	D	E	F	Est. weight per foot, pounds	Factor
37734	3.437	3.000	0.094	1.562	0.188	0.188	0.524	18
37735	3.937	3.500	0.094	1.594	0.219	0.188	0.574	18
37736	4.437	4.000	0.094	1.625	0.250	0.188	0.636	18
37737	4.937	4.500	0.094	1.656	0.281	0.188	0.691	18
37738	5.437	5.000	0.094	1.687	0.312	0.188	0.746	18
37739	5.937	5.500	0.094	1.719	0.344	0.188	0.804	18

ALUMINUM

STAINLESS STEEL

SHEET • PLATE

ROD • SHAPES • WIRE

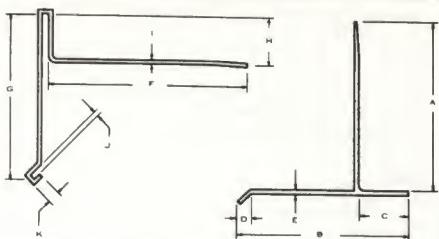
MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

WEIGHTS

BRASS

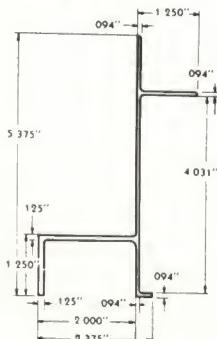
COPPER



GRAVEL STOP	A	B	C	D	E	Pounds Per Foot	Joint Cover
42059	.4	3 1/2	5/8	1/4	.0937	.697	42062
87097	4	3 1/2	1	1/4	.0937	.696	87098
42058	4	5	1	1/4	.0937	.838	42061
66588	4	6	1 1/2	1/4	.0937	.930	66589
39259	4	6 1/2	3/4	1/4	.0937	.978	39258
87096	4	6 1/2	1	1/4	.0937	.978	87095
42063	4	7 3/4	5/8	1/4	.125	1.315	42060
84968	4	7 3/4	1 1/2	1/4	.125	1.315	84969
EXTRUDED JOINT COVERS	F	G	H	I	J	K	Pounds Per 6" Piece
42062	4.125	3.500	.625	.094	.094	.250	.413
87098	4.125	3.500	1.000	.094	.094	.250	.430
42061	4.125	5.031	1.000	.094	.156	.219	.501
66589	4.125	6.031	1.500	.094	.125	.188	.572
39258	4.125	6.531	.750	.094	.125	.188	.560
87095	4.125	6.602	1.000	.094	.125	.250	.571
42060	4.125	7.782	.625	.125	.156	.281	.741
84969	4.125	7.782	1.500	.125	.156	.281	.789

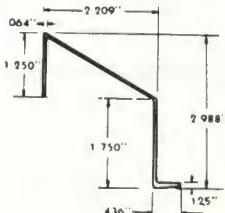
NOTE: Detailed drawings should be consulted for complete dimensional data.

SIDE SILL 45872



EST. WT. PER FT. — 1.252 LBS.
FACTOR — 16

LINTEL 45873



EST. WT. PER FT. — .499 LBS.
FACTOR — 23

ALUMINUM

ALUMINUM

YOU
SERV
YOU
META

NEW
Worth
P. O. I

CART
P. O. I
Milik
YOrkt
Dir. D
TWX-

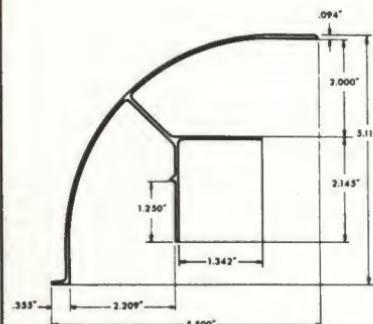
HARF
1000 S
Humb
Dir. D
TWX-

CAME
281 Al
TRowl
Dir. Dis
TWX-61

PHILADE
1955 W.
BAldwin ■
Dir. Dis
TWX-21

ROOF RAIL

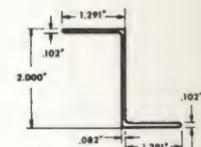
45874



EST. WT. PER FT.—1.566 LB.
FACTOR 17

SIDE POST

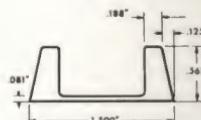
45876



EST. WT. PER FT.—.498 LB.
FACTOR 18

RUB RAIL

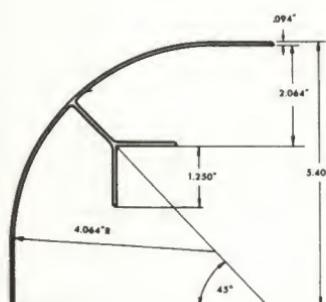
45877



EST. WT. PER FT.—.424 LB.
FACTOR 11

CORNER POST

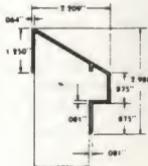
45875



EST. WT. PER FT.—1.392 LB.
FACTOR 18

LINTEL

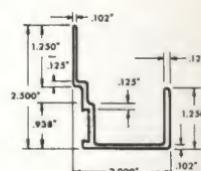
45878



EST. WT. PER FT.—.517 LB.
FACTOR 23

DOOR POST

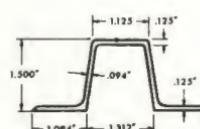
45879



EST. WT. PER FT.—.760 LB.
FACTOR 15

SIDE POST

54603



EST. WT. PER FT.—.284 LB.
FACTOR 15

ALUMINUM

STAINLESS STEEL

SHEET • PLATE
ROD • SHAPES • WIRE

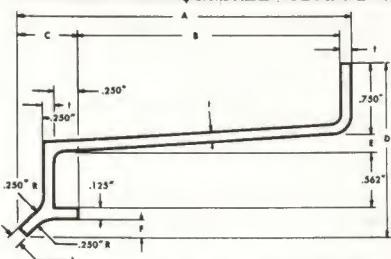
MONEL-NICKEL

FOUNDRY • BRAZING PRODUCTS
WELDING

BRASS

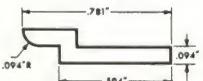
COPPER

WINDOW SILLS



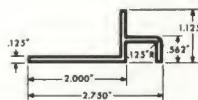
Section number	A	B	C	D	E	F	t	Weight per foot	Factor
54684	3.500	2.750	0.625	1.812	0.188	0.188	0.125	0.767	13
54685	4.000	3.250	0.625	1.844	0.219	0.188	0.125	0.842	13
54686	4.500	3.750	0.625	1.875	0.250	0.188	0.125	0.919	13
54687	5.000	4.250	0.625	1.906	0.281	0.188	0.125	0.994	13
54688	5.500	4.750	0.625	1.938	0.312	0.188	0.125	1.067	13
54689	6.000	5.250	0.625	1.969	0.344	0.188	0.125	1.141	13
54690	6.562	5.750	0.625	2.000	0.375	0.188	0.156	1.529	11
54691	7.562	6.750	0.625	2.062	0.438	0.188	0.156	1.716	11
54692	8.125	7.250	0.688	2.156	0.469	0.250	0.188	2.189	9
54693	9.125	8.250	0.688	2.219	0.531	0.250	0.188	2.414	9

END STOP 58219



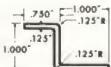
EST. WT. PER FT.—.096 LB.
FACTOR 20

PLASTER STOP 58221



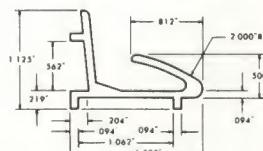
EST. WT. PER FT.—.624 LB.
FACTOR 14

ANCHOR 58222



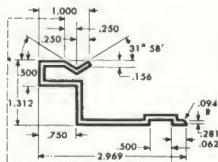
EST. WT. PER FT.—.385 LB.
FACTOR 14

PICTURE MOLD 58229



EST. WT. PER FT.—.437
FACTOR 16

CORNER TRIM



EST. PERIMETER—10.888 IN.
EST. WT. PER FT.—.604 LBS.
FACTOR 18

58391

ALUMINUM

ALUMINUM

YOU
SER
YOU
MET.

NEW
Worth
P. O. I.

CART
P. O. I.
Milik S
YOrkt
Dir. D
TWX-2

HARR
1000 S
Humb
Dir. Di
TWX-2

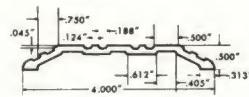
CAMB
281 Al
TRowb
Dir. Dis
TWX-617

PHILAD
1955 W. I
Baldwin
Dir. Dist.
TWX-215

TYPE R

THRESHOLD

60585

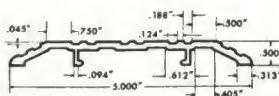


EST. WT. PER FT.—.740 LB.
FACTOR 13

TYPE R

THRESHOLD

60586

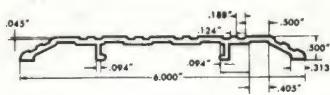


EST. WT. PER FT.—1.014 LB.
FACTOR 13

TYPE R

THRESHOLD

60587

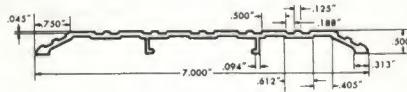


EST. WT. PER FT.—1.183 LB.
FACTOR 13

TYPE R

THRESHOLD

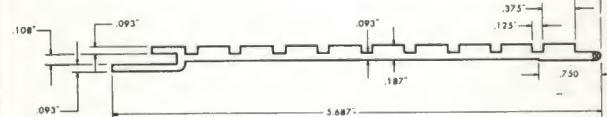
60588



EST. WT. PER FT.—1.352 LB.
FACTOR 13

FASCIA

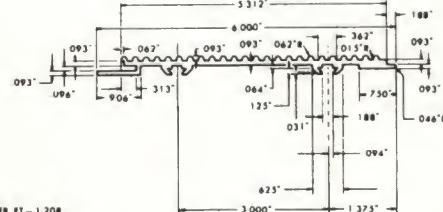
64036



EST. WT. PER FT.—1.060 LB.
FACTOR 13

FASCIA

64097



EST. WT. PER FT.—1.208
FACTOR 13

ALUMINUM

SHEET • PLATE

ROD • SHAPES • WIRE

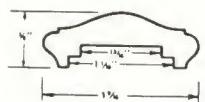
MONEL-NICKEL WEIGHTS

FOUNDRY • WELDING DATA

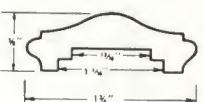
STAINLESS STEEL

BRASS

CODE



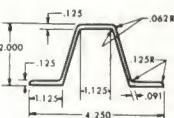
EST WT PER FT - 614 LBS
FACTOR-?



EST WT PER FT - 716 LBS
FACTOR 4



EST WT PER FT - 835 LBS
FACTOR-4



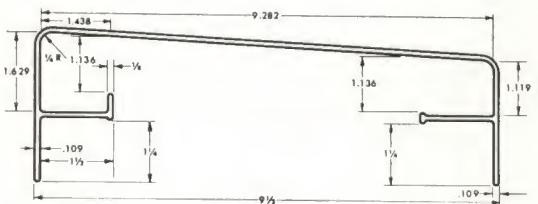
EST WT PER FT - 923
FACTOR 1.6

HANDRAIL 66295

COPING 66582

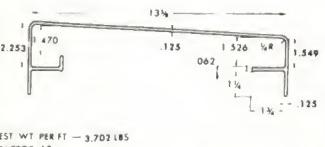
COPING G-8

66611



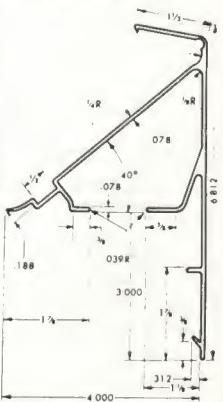
EST. WT. PER FT. - 2.412 LBS.
FACTOR 15

COPING G-12 69177



EST WT PER FT - 3.702 LBS
FACTOR 13

GRAVEL STOP 68755



ALUMINUM

ALUMINUM

YOU
SERV
YOU
META

NEW
Worth
P. O. E

CART
P. O. E
Milik S
YOrkt
Dir. D
TWX-

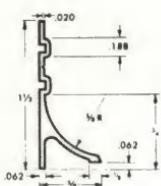
HARR
1000 S
Humb
Dir. D
TWX-

CAMB
281 Al
TRow
Dir. Dis
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

DRIP MOLD

70421



EST. WT. PER FT. — .194 LBS.
FACTOR 24

PICTURE MOLD

70422



EST. WT. PER FT. — .947 LBS.
FACTOR 14

PICTURE MOLD

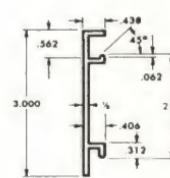
70423



EST. PERIMETER — 11.317 IN
EST. WT. PER FT. — .802 LBS.
FACTOR 14

BASE MOLD

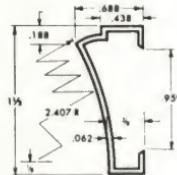
70424



EST. WT. PER FT. — .613 LBS.
FACTOR 14

WALL TRIM

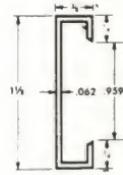
70425



EST. WT. PER FT. — .209 LBS.
FACTOR 28

TRIM

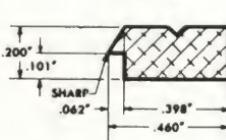
70426



EST. WT. PER FT. — .186 LBS.
FACTOR 28

END STOP
ANCHOR

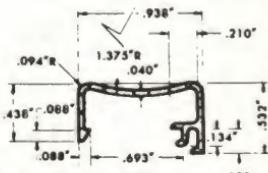
77563



EST. WT. PER FT. — .098 LB
FACTOR 13

FASCIA END STOP

77564



EST. WT. PER FT. — .106 LB
FACTOR 41

ALUMINUM

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

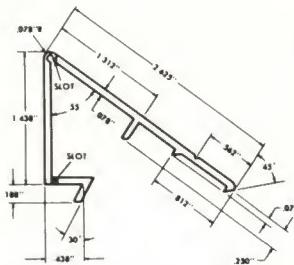
FOUNDRY & WELDING BRAZING PRODUCTS

STAINLESS STEEL

BRASS

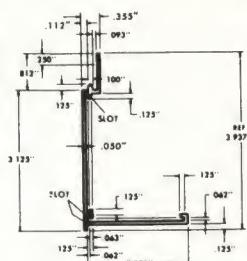
COPPER

FLASHING CAP 79587



EST WT PER FT - 400 LB

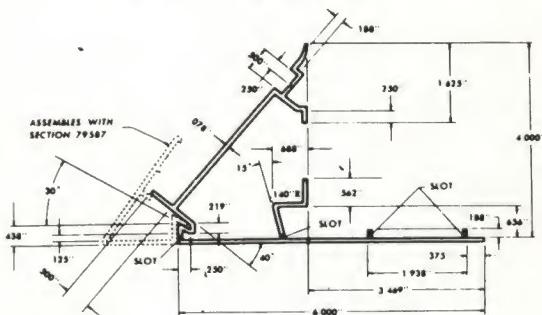
SOFFIT TRIM 79590



EST. WT. PER FT. — .443 LB.
FACTOR — 32

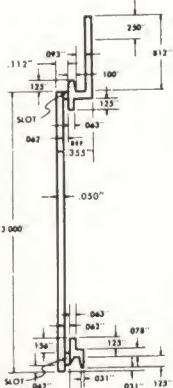
TYPE EE GRAVEL STOP

79588



EST WT PER PT - 1387 LB

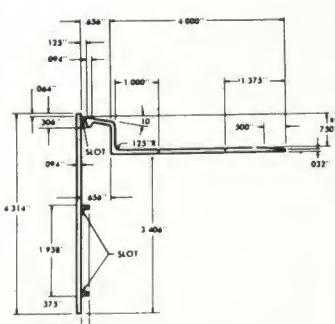
FASCIA 79589



EST. WT. PER FT. — 316 LB.

TYPE FF GRAVEL STOP

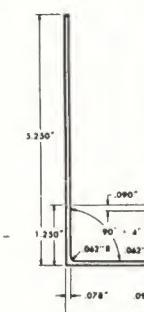
79591



IN WI CH 77 1126-39

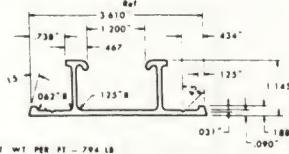
ALUMINUM

EDGE STARTER — 79803
FLOORING

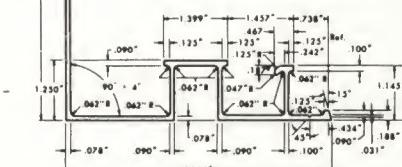


EST. WT. PER FT.—1.360 LB.
CIRCLE SIZE—7-9

CENTER STARTER — 79804
FLOORING



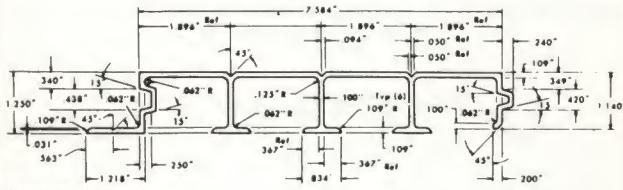
EST. WT. PER FT.—7.94 LB.



EST. WT. PER FT.—1.360 LB.

DRY FREIGHT FLOORING

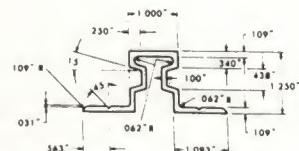
79805



EST. WT. PER FT.—2.176 LB.

CENTER STARTER —
FLOORING

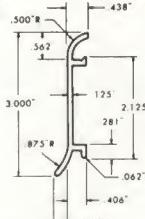
79806



EST. WT. PER FT.—7.52 LB.

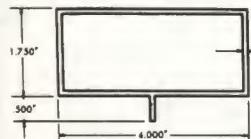
COVE
BASE

84701



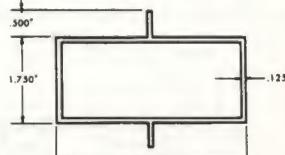
EST. WT. PER FT.—.590 LB.
FACTOR 14

MULLION OR FRAME 79840



EST. WT. PER FT.—1.437
FACTOR 13

MULLION OR FRAME 79841



EST. WT. PER FT.—1.800'
FACTOR 13

STAINLESS STEEL

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

BRASS

FOUNDRY • WELDING
BRAZING PRODUCTS

COPPER

ALUMINUM

ALUMINUM

YOU
SERV
YOU
MET

NEW
WOrth
P. O.

CART
P. O.
Milik
YOrkt
Dir. L
TWX-

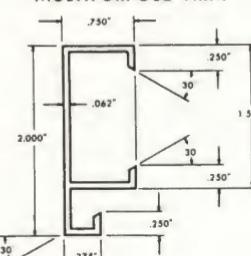
HARF
1000 S
HUm
Dir. L
TWX-

CAME
281 A
TRow
Dir. Dis
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

MULTIPURPOSE TRIM

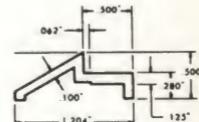
84782



EST. WT. PER FT.—312 LB.
FACTOR 27

THRESHOLD MITER STRIP

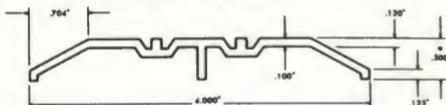
84781



EST. WT. PER FT.—211
FACTOR 17

TYPE H THRESHOLD — 4"

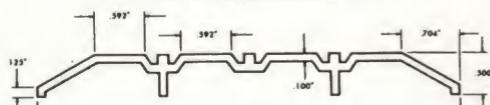
84782



EST. WT. PER FT.—430
FACTOR 17

TYPE H THRESHOLD — 5"

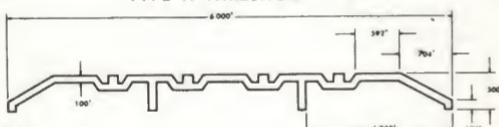
84783



EST. WT. PER FT.—504
FACTOR 17

TYPE H THRESHOLD — 6"

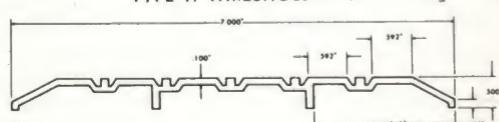
84784



EST. WT. PER FT.—608
FACTOR 17

TYPE H THRESHOLD — 7"

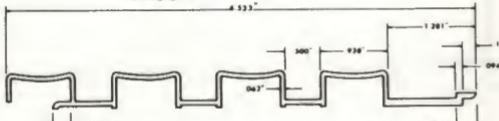
84785



EST. WT. PER FT.—1,127
FACTOR 16

FASCIA

87066



EST. WT. PER FT.—820
FACTOR 23

ALUMINUM

SHEET • PLATE

ROD • SHAPES • WIRE

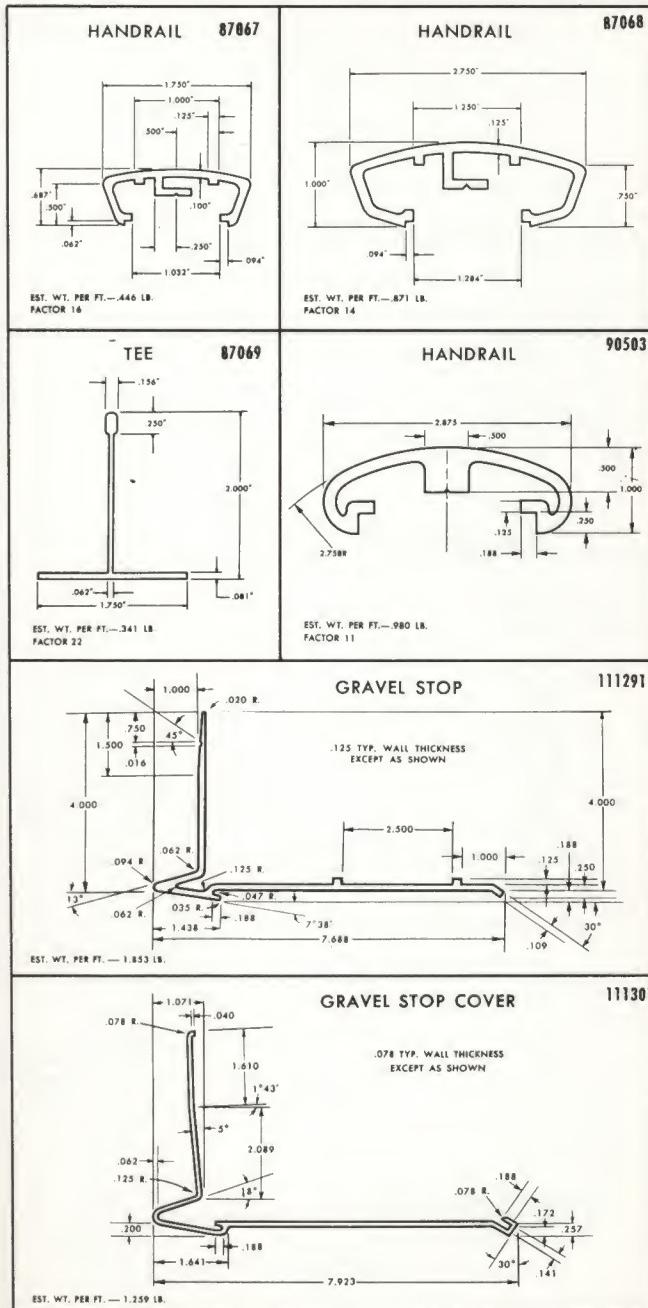
MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

STAINLESS STEEL

BRASS

COPPER



ALUMINUM

ALUMINUM

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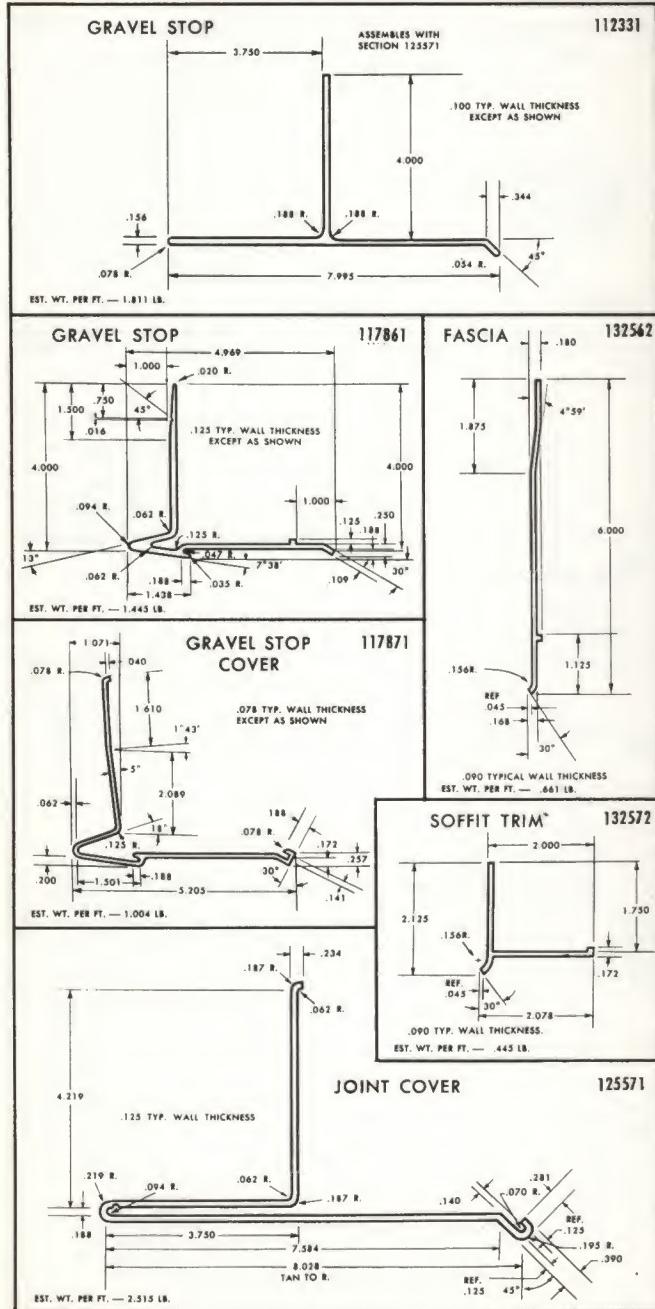
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HARF
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Humb
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TWX-

CAME
281 Al
TRow
Dir. D
TWX-61

PHILAD
1955 W.
BALDWIN
Dir. Dist
TWX-21



ALUMINUM

HANDRAIL BRACKET 301-B	HANDRAIL BRACKET 302-B
HANDRAIL BRACKET 303-B (16505-B)	CHANNEL SCROLL 16505-C
SCROLL (LEFT OR RIGHT) 16505-S	TERMINAL END 16505-E
LAMBS TONGUE 20609-L	CHANNEL SCROLL 20609-C
SCROLL (LEFT OR RIGHT) 20609-S	TERMINAL END 20609-E
	CHANNEL SCROLL 66294-C
	TERMINAL END 66294-E

STAINLESS STEEL

BRASS

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY DATA
BRAZING PRODUCTS

INDUSTRIAL PRODUCTS

ALUMINUM

ALUMINUM

YOU
SERV
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Worth
P. O. E

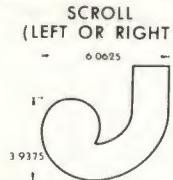
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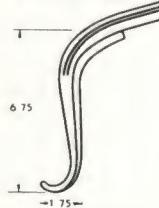
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TWX-21

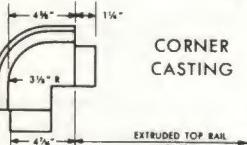
SCROLL (LEFT OR RIGHT) 66294-S



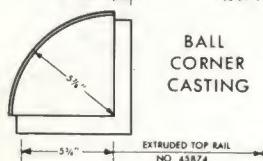
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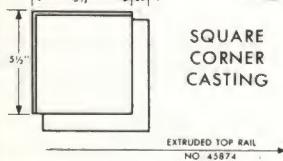
CORNER CASTING 16B-48



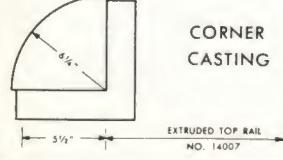
45874-B



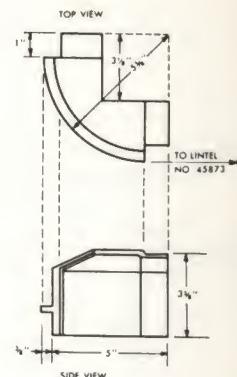
45874-S



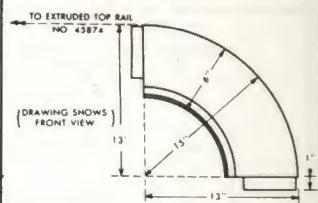
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LINTEL CORNER CASTING 45873



CORNER CASTING 45874-R



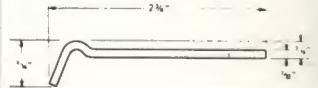
SC-201
For 70422
70423
70424
84701



SC-202
For 8321
70425
70426



WINDOW SILL ANCHOR CLIP SA-100
for 54684 thru 54693



STAINLESS STEEL

SHAFT • PLATE
ROD • BAR

BRASS

COPPER

**WHAT DO YOU WANT
TO KNOW ABOUT
BRASS**

Complete information, including the latest technical developments made by the engineering and research departments of the Anaconda American Brass Company is available to you free of charge. Some of this literature is listed on the next page.

If at any time you have problems about brass, call our nearest warehouse sales office for help.



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BRASS

Stocks change from time to time. If the material you want is not listed here, call or write our office nearest you for additional information.

LITERATURE ON BRASS

Here are a few of the booklets published by the Anaconda American Brass Company that are available to you. This literature is free, and may be had by calling our representative, or writing our nearest warehouse sales office.

Anaconda Copper and Copper Alloys

Data for the user of Copper & Copper Alloys

Copper & Copper Alloy Metalexicon

PRACTICAL SUGGESTIONS for Machining Copper, Brass Bronze and Nickel Silver

Tubes and Plates for Condensers and Heat Exchangers

Copper for Electrical Conductors

Rods for Screw Machine Products

Welding Rods and Procedures for Welding Copper and Copper Alloys

Copper Tubes and Fittings

Anaconda through-wall Flashing

Extruded Architectural Bronze Thresholds

EVERDUR Alloys, Physical Properties and Applications

EVERDUR Electrical Conduit

TELEPHONES OF OFFICES

AND WAREHOUSES

New York, New York	WOrth 4-2800
Cambridge, Mass.	TRowbridge 6-4680
Carteret, N. J.	YOrktown 9-2000
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Syracuse, N. Y.	Howard 3-6241
Windsor, Conn.	'phone 688-4921
Rochester, N. Y.	BUtler 8-2141

BRASS SHEET WEIGHT TABLE

YELLOW BRASS
OLD ALLOY NO. 42
NEW ALLOY NO. 260

**Pounds per
Square Foot**

Thickness (in inches)	B & S Gauge	Pounds per Sq. Ft.	Thickness (in inches)	B & S Gauge	Pounds per Sq. Ft.
1.000	—	44.35	.0571	15	2.532
.875	—	38.81	.0508	16	2.253
.750	—	33.26	.0453	17	2.009
.625	—	27.72	.0403	18	1.787
.500	—	22.18	.0359	19	1.592
.4600	4/0	20.40	.0320	20	1.419
.4096	3/0	18.17	.0285	21	1.264
.375	—	16.63	.0254	22	1.122
.3648	2/0	16.18	.0226	23	1.002
.3249	1/0	14.41	.0201	24	.8915
.3125	—	13.86	.0179	25	.7939
.2893	1	12.83	.0159	26	.7052
.2576	2	11.43	.0142	27	.6298
.250	—	11.09	.0126	28	.5588
.2294	3	10.17	.0113	29	.5012
.2043	4	9.061	.0100	30	.4435
.1875	—	8.316	.0089	31	.3947
.1819	5	8.068	.0080	32	.3548
.1620	6	7.185	.0071	33	.3149
.1443	7	6.400	.0063	34	.2794
.1285	8	5.699	.0056	35	.2484
.125	—	5.544	.0050	36	.2218
.1144	9	5.074	.0045	37	.1996
.1019	10	4.519	.0040	38	.1774
.0907	11	4.023	.0035	39	.1552
.0808	12	3.584	.0031	40	.1375
.0720	13	3.193	.0028	41	.1242
.0641	14	2.843	.0025	42	.1109

WEIGHT CONVERSION FACTORS

for Use With Above Table

Alloy	Alloy No.	Conversion Factor	Alloy	Alloy No.	Conversion Factor
MUNTZ METAL	66	0.9870	TOBIN BRONZE	450	
CLOCK OLD: 246 BRASS NEW: 3532	{	0.9903	AND NAVAL & BRASS	452	0.9870
GRADE A PHOSPHOR BRONZE OLD: 351 NEW: 510			MANGANESE BRONZE	937	.09805
COMMERCIAL BRONZE	14	1.0389	EVERDUR	1010	1.0000
			ARCHITECTURAL BRONZE OLD: 280 NEW: 355	{	1.000

SHEET • PLATE

ROD • BAR

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING
STEEL

COPPER

STAINLESS STEEL

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

BRAZING PRODUCTS

BRASS

ALUMINUM

YELLOW BRASS COILED SHEET — SOFT

Old Alloy No. 42
New Alloy No. 260

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0031	6	.0687	.0254	10	.929
.0050	8	.153		12	1.122
.0063	6	.1397		14	1.31
	8	.185	.0320	6	.705
.0080	12	.3548		8	.940
.0100	12	.4435		10	1.175
.0126	6	.277		12	1.419
	12	.5588		14	1.640
	20*	.925	.0359	10	1.29
.0159	6	.35	.0403	12	1.787
	12	.7052		14	1.92
.0201	6	.443	.0508	8	1.49
	8	.5944		12	2.253
	10	.738	.0641	6	1.41
	12	.8915		10	2.35
	14	1.03		12	2.82
.0254	6	.557		14	3.29
	8	.740			

* Dead Soft

YELLOW BRASS COILED SHEET — HALF HARD

Old Alloy No. 42
New Alloy No. 260

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0080	12	.3548	.0254	12	1.122
.0100	12	.4435	.0320	12	1.419
.0126	12	.5588	.0359	12	1.592
.0159	12	.7052	.0403	12	1.787
	14	.817	.0453	12	2.009
.0201	6	.443	.0508	12	2.253
	12	.8915			

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TWX

CAM
281 A
TRow
Dir. L
TWX-6

PHILAD
1955 W.
BALdwin
Dir. Dis
TWX-21

BRASS

YELLOW BRASS COILED STRIP — SPRING TEMPER

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0031	6	.0687
.0040	6	.0889
.0063	6	.1397
	8	.185
	12	.2794
.0080	2	.059
	8	.235
	12	.3548
.0100	8	.294
	12	.4435

Alloy No. 42
New Alloy No. 260

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0126	6	.2794
	8	.370
	12	.5588
.0159	8	.477
	12	.7052
.0201	6	.4458
	12	.8815
.0254	12	1.122
.0320	8	.94
.0403	8	1.18
.0508	12	2.253

YELLOW BRASS FLAT STRIP — SPRING TEMPER

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.0320	12 X 96	1.419
.0403	12 X 96	1.787

Old Alloy No. 42
New Alloy No. 260

YELLOW BRASS STRIP — SOFT

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.0201	12 X 96	.8815
.0254	12 X 96	1.122
.0320	12 X 96	1.419
.0359	12 X 96	1.592
.0403	12 X 96	1.787
.0508	12 X 96	2.253

Old Alloy No. 42
New Alloy No. 260

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.0641	12 X 96	2.843
.0808	12 X 96	3.584
.0907	12 X 96	4.023
.1019	12 X 96	4.519
.1250	12 X 96	5.544

STAINLESS STEEL

ROD • BAR

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING

COPPER

BRASS

ALUMINUM

FORMBRITE BRASS SHEET — HALF HARD

Old Alloy No. 42
New Alloy No. 260

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.010	12 X 96	.4435	.0359	12 X 96	1.592
.0126	12 X 96	.5588	.0403	8 X 96	1.184
.0159	10 X 96	.584		10 X 96	1.480
	12 X 96	.7052		12 X 96	1.787
	24 X 96	1.4104		14 X 96	2.072
.0179	12 X 96	.7939		16 X 96	2.368
.0201	8 X 96	.591		24 X 96	3.574
	12 X 96	.8915	.0453	12 X 96	2.009
	14 X 96	1.033		14 X 96	2.328
	18 X 96	1.329	.0508	8 X 96	1.492
	24 X 96	1.783		10 X 96	1.865
.0254	8 X 96	.743		12 X 96	2.253
	12 X 96	1.122		14 X 96	2.612
	14 X 96	1.301		16 X 96	2.984
	18 X 96	1.672		18 X 96	3.358
	24 X 96	2.244		24 X 96	4.506
.0320	6 X 96	.705	.0571	12 X 96	2.532
	8 X 96	.940	.0641	6 X 96	1.412
	10 X 96	1.175		8 X 96	1.88
	12 X 96	1.419		10 X 96	2.35
	14 X 96	1.645		12 X 96	2.825
	16 X 96	1.880		14 X 96	3.296
	18 X 96	2.129		16 X 96	3.76
	24 X 96	2.838		24 X 96	5.686

YELLOW BRASS STRIP — HALF HARD

Old Alloy No. 42
New Alloy No. 260

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.0720	14 X 96	3.71	.1019	12 X 96	4.519
.0808	12 X 96	3.584	.1250	10 X 96	4.59
	16 X 96	4.75		12 X 96	5.544
.0907	12 X 96	4.023		14 X 96	6.43
	24 X 96	8.046		24 X 96	11.088
.093	12 X 96	4.158	.1875	12 X 96	8.316

CAME

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TRowl

Dir. D

TWX-61,

PHILADI

1955 W. E

Baldwin

Dir. Dist.

TWX-215

BRASS

YELLOW BRASS SHEET AND STRIP — HALF HARD

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0320	14 X 96	1.64
.0641	12 X 96	2.83
	14 X 96	3.29
.0907	6 X 96	2.00
	8 X 96	2.66
	10 X 96	3.30
	12 X 96	3.99
	14 X 96	4.66
	24 X 96	7.98
.1250	12 X 96	5.51

Old Alloy No. 59
New Alloy No. 268

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.1250	14 X 96	6.43
	16 X 96	7.37
.1875	14 X 96	9.64
.2500	14 X 96	12.85
.3750	14 X 96	19.28
.5000	12 X 96	22.03
	14 X 96	25.70
.6250	14 X 96	28.11
	16 X 96	32.13

YELLOW BRASS SHEET AND STRIP — HALF HARD

Extra High Leaded
Old Alloy No. 238
New Alloy No. 356

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.0508	12 X 96	2.24
.0641	12 X 96	2.83
.0907	6 X 96	2.00
	8 X 96	2.66
	12 X 96	3.99
	14 X 96	4.66
	18 X 96	5.99
.1019	8 X 96	3.00
	14 X 96	5.25
.1250	6 X 96	2.75
	8 X 96	3.67
	10 X 96	4.59
	12 X 96	5.51
	14 X 96	6.43
	16 X 96	7.34
.1562	12 X 96	6.88
.1875	6 X 96	4.13
	8 X 96	5.51
	8 X 120	5.51
	10 X 96	6.88
	12 X 96	8.26
	14 X 96	9.64
.2500	6 X 96	5.51
	8 X 96	7.37
	10 X 96	9.18
	12 X 96	11.02

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.2500	14 X 96	12.85
	16 X 96	14.74
.3125	18 X 96	16.52
	24 X 48	22.04
	6 X 96	6.89
	10 X 96	11.48
	12 X 96	13.78
.3750	6 X 96	8.26
	8 X 96	11.02
	12 X 96	16.52
	14 X 96	19.28
	16 X 96	22.04
	18 X 96	24.79
	24 X 48	33.04
.5000	6 X 96*	11.02

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
	8 X 96*	14.74
	10 X 96*	18.38
	12 X 96*	22.04
	14 X 96*	25.70
	24 X 48*	44.06
.6250	6 X 96*	13.82
	10 X 96*	23.04
	12 X 96	27.64
	14 X 96*	32.25
1.000	24 X 96	88.12

* Sawed edges

STAINLESS STEEL

ROD • BAR

TUBING • PIPE
SHAPES

HYDRAULIC TUBING

COPPER

BRASS

ALUMINUM

YELLOW BRASS PLATE — HALF HARD

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.250*	6	5.49	.500*	12	21.96
	12	10.98	.625	12	27.44
.3125*	12	13.72	.750	12	32.93
.375*	12	16.46	1.000	12	43.91

*Also furnished sheared.

NAVAL BRASS HOT ROLLED SHEET AND PLATE

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.125	36 X 96	131.3	.250	48 X 96	350.4
	48 X 120	218.8		48 X 120	438.0
.188	36 X 96	197.0	.375	36 X 120	492.3
	48 X 96	262.7		48 X 120	656.4
	48 X 120	328.4	.500	48 X 120	881.2
.250	36 X 96	262.8	1.000	48 X 120	1762.4

NAVAL BRASS COLD ROLLED SHEET AND PLATE

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.0320	36 X 96	33.6	.0907	36 X 96	95.3
.0403	36 X 96	42.3	.1250	36 X 96	131.3
.0508	36 X 96	53.4	.1875	36 X 96	197.0
.0625	36 X 96	66.1	.250	36 X 96	262.8
.0641	36 X 96	67.4			

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BRASS

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281 All
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Dir. Di
TWX-61

PHILAD
1955 W.
BALdwin
Dir. Dist
TWX-21

BRASS

PHOSPHOR BRONZE STRIP

Old Alloy No. 351
New Alloy No. 510

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.005	6 X ROLLS	.115	.022	6 X COILS	.500
.006	6 X COILS	.138	.025	6 X COILS	.583
.008	6 X COILS	.184	.032	6 X COILS	.737
.010	6 X COILS	.230		6 X 96 R/L	.737
.012	6 X COILS	.276	.040	6 X COILS	.929
.014	6 X COILS	.322		6 X 96 R/L	.929
.0159	6 X COILS	.366	.051	6 X 96 R/L	1.170
.018	6 X COILS	.405	.064	6 X 96 R/L	1.477
.020	6-X COILS	.461			

MUNTZ METAL PLATE — HALF HARD

Cold Rolled, Leaded
Old Alloy No. 274
New Alloy No. 365

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.250	30 X 96	138.0
1.250	12 X 96	438.0
1.500	12 X 96	535.5

MUNTZ METAL SHEET COLD ROLLED

Old Alloy No. 66
New Alloy No. 280

Thickness (in inches)	Size (in inches)	Pounds Per Sheet	Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.032	30 X 96	28.0	.081	24 X 96	56.0
	36 X 96	33.5		36 X 96	85.0
	36 X 120	43.0		36 X 120	109.0
.040	36 X 96	42.2	.091	36 X 144	128.0
	36 X 120	53.5		36 X 96	96.0
.051	36 X 96	53.2	.102	36 X 96	108.0
	36 X 120	67.5		24 X 96	88.0
.062	36 X 96	65.5	.125	24 X 144	132.0
	48 X 120	109.0		30 X 60	69.0
	24 X 96	45.0		30 X 96	110.0
.064	24 X 144	68.0	.102	30 X 144	165.0
	30 X 96	56.5		36 X 96	130.9
	30 X 144	84.75	.125	36 X 144	193.0
	36 X 996	67.1		48 X 120	218.2
	36 X 120	87.0	.188	30 X 60	103.0
	36 X 144	102.0		36 X 96	196.3
	48 X 129	112.9	.250	36 X 96	261.9

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

STAINLESS STEEL

ROD • BAR

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING

COPPER

BRASS

ALUMINUM

Y
SEE
Y
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1000 S
HUm
Dir. L
TWX-CAME
281 Al
TRow
Dir. D
TWX-61

PHILAD
1955 W. I
BAldwin
Dir. Dist.
TWX-215

MUNTZ METAL SHEET HOT ROLLED

Old Alloy No. 66
New Alloy No. 280

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.250	36 X 96	261.8
	48 X 120	436.4
.500	48 X 120	872.4

18% NICKEL SILVER COILED SHEET

Old Alloy No. 719
New Alloy No. 752

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0100	8	.294	.0254	6	.576
.0126	8	.382	.0320	6	.728
.0159	8	.482	.0403	8	1.223
.0201	8	.610	.0508	6	1.156

18% NICKEL SILVER COILED STRIP — SPRING TEMPER

Old Alloy No. 724
New Alloy No. 770

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0126	6	.287	.0254	6	.576
.0159	6	.362	.0320	6	.726
.0201	6	.457			

18% NICKEL SILVER SHEET — 1/4 HARD

Old Alloy No. 719
New Alloy No. 752

Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot	Thickness (in inches)	Width (in inches)	Pounds per Lineal Foot
.0254	12 X 96	9.25	.0641	12 X 96	23.50
.0320	12 X 96	11.75	.0907	12 X 96	33.00
.0403	12 X 96	14.75	.1250	12 X 96	45.50

BRASS

EVERDUR BRONZE SHEET

Alloy No. 1010

Thickness (in inches)	Size (in inches)	Pounds Per Sheet
.0641	36 X 96	57
.0938	30 X 96	85
.1250	30 X 96	111
.1875	30 X 96	167
.2500	30 X 96	222

RED BRASS COILED SHEET — SOFT

Formerly 85% Rich Low Brass
Old Alloy No. 24
New Alloy No. 230

Thickness (in inches)	Size (in inches)	Pounds per Lineal Foot
.0201	12	.91



FREE CUTTING BRASS ROUND ROD

Old Alloy No. 271
New Alloy No. 360
Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/16	.0113	11/16	1.368	2	11.57
3/32	.0254	3/8	1.628	21/16	12.31
7/64 *	.034	25/32	1.766	21/8	13.07
1/8	.0452	13/16	1.910	23/16	13.85
9/64	.057	7/8	2.215	21/4	14.65
5/32	.0706	15/16	2.543	25/16	15.47
3/16	.1017	1	2.893	23/8	16.32
7/32	.1385	11/16	3.266	21/2	18.08
15/64	.155	11/8	3.662	25/8	19.94
13/32	.1808	13/16	4.080	23/4	21.88
9/32	.2289	11/4	4.521	27/8	23.93
5/16	.2826	15/16	4.984	3	26.04
11/32	.3419	13/8	5.470	31/8	28.26
3/8	.4069	17/16	5.979	31/4	30.56
13/32	.4775	11/2	6.510	31/2	35.44
7/16	.5538	19/16	7.064	33/4	40.69
15/32	.6358	15/8	7.640	4	46.30
1/2	.7234	111/16	8.239	41/4	52.3
17/32	.8166	13/4	8.861	41/2	58.59
9/16	.9155	113/16	9.505	5 **	72.34
19/32	1.020	17/8	10.17	6 **	104.21
5/8	1.130	115/16	10.86		

*6 Foot Lengths

** 5 Foot Lengths

STAINLESS STEEL

ROD • BAR

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING
STEEL

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS**FREE CUTTING BRASS
SQUARE BAR**

**Old Alloy No. 271
New Alloy No. 360
Mill Lengths**

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{32}$	.0324	$\frac{9}{16}$	1.166	$1\frac{1}{8}$	4.663
$\frac{1}{8}$	.0576	$\frac{5}{8}$	1.439	$1\frac{1}{4}$	5.756
$\frac{3}{16}$	.1295	$1\frac{1}{16}$	1.741	$1\frac{3}{8}$	6.965
$\frac{1}{4}$	.2303	$\frac{3}{4}$	2.072	$1\frac{1}{2}$	8.289
$\frac{5}{16}$	.3598	$1\frac{3}{16}$	2.432	$1\frac{3}{4}$	11.28
$\frac{3}{8}$	.5181	$\frac{7}{8}$	2.821	2	14.74
$\frac{7}{16}$	.7051	1	3.684	$2\frac{1}{4}$	18.65
$\frac{1}{2}$	.9210			3	33.16

**FREE CUTTING BRASS
RECTANGULAR BAR**

**Old Alloy No. 271
New Alloy No. 360
12 Foot Mill Lengths**

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times 1\frac{1}{4}$	.576	$\frac{5}{16} \times 1$	1.198	$\frac{1}{2} \times 4$	7.368
$\frac{5}{32} \times \frac{1}{2}$	.287	$1\frac{1}{2}$	1.75	$\frac{5}{8} \times \frac{3}{4}$	1.727
$\frac{3}{16} \times \frac{3}{8}$	.259	2	2.303	$\frac{7}{8}$	2.016
$\frac{1}{2}$	.345	3	3.453	1	2.303
$\frac{5}{8}$	.432	$\frac{3}{8} \times \frac{1}{2}$	.691	$1\frac{1}{4}$	2.879
$\frac{3}{4}$	.518	$\frac{5}{8}$	.864	$1\frac{1}{2}$	3.431
$\frac{7}{8}$	.604	$\frac{3}{4}$	1.036	2	4.606
1	.691	$\frac{7}{8}$	1.209	$\frac{3}{4} \times 1$	2.763
$1\frac{1}{4}$	.863	1	1.382	$1\frac{1}{4}$	3.454
$1\frac{1}{2}$	1.036	$1\frac{1}{4}$	1.727	$1\frac{1}{2}$	4.145
2	1.382	$1\frac{1}{2}$	2.072	$1\frac{3}{4}$	4.835
$\frac{1}{4} \times \frac{3}{8}$	.345	$1\frac{3}{4}$	2.418	2	5.527
$\frac{1}{2}$	.460	2	2.763	1 $\times 1\frac{1}{2}$	5.527
$\frac{5}{8}$	.576	$2\frac{1}{2}$	3.454	2	7.370
$\frac{3}{4}$	.691	3	4.145		-
$\frac{7}{8}$	.806	$3\frac{1}{2}$	4.834		-
1	.921	4	5.526		-
$1\frac{1}{4}$	1.151	5	6.908		-
$1\frac{1}{2}$	1.382	$\frac{1}{2} \times \frac{5}{8}$	1.152		-
$1\frac{3}{4}$	1.612	$\frac{3}{4}$	1.382		-
2	1.842	$\frac{7}{8}$	1.612		-
$2\frac{1}{2}$	2.303	1	1.842		-
3	2.763	$1\frac{1}{4}$	2.303		-
$3\frac{1}{2}$	3.224	$1\frac{1}{2}$	2.763		-
4	3.684	$1\frac{3}{4}$	3.224		-
5*	4.606	2	3.684		-
$\frac{5}{16} \times \frac{1}{2}$	.56	$2\frac{1}{2}$	4.605		-
$\frac{3}{4}$	.863	3	5.526		-

* Forging Brass

HAI

1000

HU

Dir.

TWI

CAN

281

TRo

Dir.

TWX-

PHILA

1955 W

BALDW

Dir. Di

TWX-2

BRASS

HIGH LEADED BRASS RECTANGULAR BAR

Old Alloy No. 243
New Alloy No. 353
12 Foot Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{32} \times \frac{1}{4}$	.086	$\frac{1}{8} \times \frac{3}{16}$	.086
$\frac{3}{8}$	.129	$\frac{1}{4}$	.115
$\frac{1}{2}$	.173	$\frac{3}{8}$	.173
$\frac{5}{8}$	.216	$\frac{1}{2}$	.230
$\frac{3}{4}$	.259	$\frac{5}{8}$	.288
$\frac{7}{8}$	.302	$\frac{3}{4}$	.345
1	.345	$\frac{7}{8}$	.403
$1\frac{1}{4}$	.432	1	.460
$1\frac{1}{2}$	.518	$1\frac{1}{8}$	.518
2 *	.691	$1\frac{1}{4}$	.576
		$1\frac{1}{2}$	.691
		$1\frac{3}{4}$	.806
		2	.921

* Extra High Leaded

HALF HARD RECTANGULAR BRASS BAR

Old Alloy No. 42
New Alloy No. 260
12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{16} \times \frac{1}{4}^*$	.058	$\frac{1}{16} \times \frac{1}{2}$	.345
$\frac{5}{16}^*$	.072	$\frac{1}{4} \times \frac{3}{4}$	.396
$\frac{3}{8}^*$	.086	2	.460
$\frac{1}{2}$	.115	$2\frac{1}{4}$	.520
$\frac{5}{8}$	.144	$2\frac{1}{2}$	.560
$\frac{3}{4}$	.173	3	.691
1	.230	4	.900
$1\frac{1}{4}$	.288	5	1.12

* Flat Wire Size

HALF HARD RECTANGULAR BRASS BAR

Extra High Leaded
Old Alloy No. 238
New Alloy No. 356
12 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{32} \times 2$	8.22	$\frac{1}{8} \times 3$	1.381	$\frac{3}{16} \times 4$	2.764
3	1.036	$3\frac{1}{2}$	1.619	5	3.45
4	1.424	4	1.912	$\frac{3}{8} \times 5$	6.90
$\frac{1}{8} \times 2\frac{1}{4}$	1.036	5	2.302		
$2\frac{1}{2}$	1.151	$\frac{3}{16} \times 2\frac{1}{2}$	1.727		

STAINLESS STEEL

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING
STEEL

COPPER

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING • PRODUCTS

BRASS

ALUMINUM



FREE CUTTING BRASS HEXAGONAL ROD

Old Alloy No. 271
New Alloy No. 360
Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
3/32	.02804	3/4	1.795	1 5/16	7.789
7/64	.0383	13/16	2.106	1 5/8	8.425
1/8	.04985	7/8	2.443	11 1/16	9.085
3/16	.1122	1 5/16	2.804	1 3/4	9.771
7/32	.1527	1	3.190	1 13/16	10.48
1/4	.1994	1 1/16	3.602	1 7/8	11.22
5/16	.3116	1 1/2	4.038	1 15/16	11.98
3/8	.4487	1 3/16	4.499	2	12.76
7/16	.6107	1 1/4	4.985	2 1/4	16.15
1/2	.7976	1 5/16	5.496	2 3/8	18.00
9/16	1.009	1 3/8	6.032	2 1/2	19.94
5/8	1.246	1 7/16	6.593	2 5/8	21.98
1 1/16	1.508	1 1/2	7.178	2 3/4	24.13



FREE CUTTING BRASS HALF OVAL ROD

12 Foot Random Lengths
Old Alloy No. 271
New Alloy No. 360

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
3/32 X 3/8	.100	3/16 X 3/4	.344	5/16 X 1 1/4	1.000
1/8 X 3/8	.151	7/32 X 7/8	.512	3/8 X 1 1/2	1.448
1/8 X 1/2	.180	1/4 X 1	.644	1/2 X 2	2.58
5/32 X 5/8	.281				



FREE CUTTING BRASS HALF ROUND BAR

12 Foot Random Lengths
Old Alloy No. 271
New Alloy No. 360

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
5/32 X 5/16	.141	3/8 X 3/4	.814	5/8 X 1 1/4	2.261
1/4 X 1/2	.362	7/16 X 7/8	1.109	3/4 X 1 1/2	3.255
5/16 X 5/8	.565	1/2 X 1	1.45		

BRASS

HARD
1000 S
HUM
Dir. I
TWX-

CAMP
281 A
TROW
Dir. B
TWX-61

PHILAD
1955 W.
BALDWIN
Dir. Dist
TWX-21

BRASS



NAVAL BRASS ROUND ROD

Mill Lengths
Old Alloy No. 450
New Alloy No. 464

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/8	.0448	1 1/8	3.626	2	11.46
3/16	1.007	1 3/16	4.040	2 1/4	14.50
1/4	.1791	1 1/4	4.477	2 5/8	16.16
5/16	.2798	1 5/16	4.936	2 7/16	17.02
3/8	.4029	1 3/8	5.417	2 1/2	17.91
7/16	.5484	1 7/16	5.921	2 3/4	21.67
1/2	.7163	1 1/2	6.447	3	25.79
9/16	.9065	1 9/16	6.995	3 1/8	27.97
5/8	1.119	1 5/8	7.566	3 1/4	30.26
11/16	1.354	1 11/16	8.16	3 1/2	35.10
3/4	1.612	1 3/4	8.774	3 3/4	40.29
7/8	2.194	1 25/32	9.090	4	45.84
1	2.865	1 7/8	10.07	4 1/2	58.02
1 1/16	3.234				

NAVAL BRASS HEXAGONAL ROD

Mill Lengths
Old Alloy No. 450
New Alloy No. 464

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/4	.1974	3/4	1.777	1 5/8	5.973
5/16	.3085	1 3/16	2.085	1 1/2	7.108
3/8	.4443	7/8	2.419	1 5/8	8.342
7/16	.6047	1 5/16	2.777	1 3/4	9.675
1/2	.7898	1	3.159	2	12.64
5/8	1.234	1 1/8	3.998	2 1/4	15.99
11/16	1.493	1 1/4	4.936	2 1/2	19.75

STAINLESS STEEL

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING

COPPER

BRASS

ALUMINUM

TOBIN BRONZE ROUND ROD

Mill Lengths

Alloy No. 452

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.045	1	2.865	$2\frac{1}{4}$	14.50
$\frac{1}{4}$	.1791	$1\frac{1}{16}$	3.23	$2\frac{1}{2}$	17.91
$\frac{5}{16}$	.279	$1\frac{1}{8}$	3.626	$2\frac{3}{4}$	21.67
$\frac{3}{8}$	.4029	$1\frac{3}{16}$	4.040	3	25.79
$\frac{7}{16}$	.5484	$1\frac{1}{4}$	4.477	$3\frac{1}{4}$	30.22
$\frac{1}{2}$	.7163	$1\frac{5}{16}$	4.93	$3\frac{1}{2}$	35.10
$\frac{9}{16}$	.9065	$1\frac{3}{8}$	5.417	$3\frac{3}{4}$	40.29
$\frac{5}{8}$	1.119	$1\frac{1}{2}$	6.447	4	45.84
$1\frac{1}{16}$	1.353	$1\frac{5}{8}$	7.566	$4\frac{1}{2}$	58.02
$\frac{3}{4}$	1.612	$1\frac{3}{4}$	8.774	5	71.63
$1\frac{3}{16}$	1.89	$1\frac{7}{8}$	10.07	$5\frac{1}{2}$	86.67
$\frac{7}{8}$	2.194	2	11.46	6" X 5"	103.1
$1\frac{5}{16}$	2.518	$2\frac{1}{8}$	12.92		

TOBIN BRONZE SHAFTING

Turned and Specially Straightened Alloy No. 452

Size (in inches)	Exact Length (in feet)	Pounds per Lineal Foot	Size (in inches)	Exact Length (in feet)	Pounds per Lineal Foot
$\frac{3}{4}$	12	1.612	$1\frac{1}{2}$	18	6.447
$\frac{7}{8}$	12	2.19		20	6.447
1	12	2.865		$1\frac{3}{4}$	16
	16	2.865		18	- 8.77
HARF					
1000 S					
HUm					
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TWX-					
CAME					
281 Al					
TRowl					
Dir. D					
TWX-61					
PHILAD					
1955 W. I					
BAlwdin					
Dir. Dist.					
TWX-215					

BRASS

TOBIN BRONZE HEXAGONAL ROD

Alloy No. 452
12 Foot Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
7/8	2.416	1 1/2	7.10
1	3.155	1 3/4	9.66
1 1/4	4.93	2	12.62

FORGING BRASS ROUND ROD

Old Alloy No. 250
New Alloy No. 377
12 Foot Mill Lengths

Diameter (in inches)	Pounds per Lineal Foot
23/32	1.49
27/32	2.06
1 15/32	7.10

COMMERCIAL BRONZE ROUND ROD

Leaded
Old Alloy No. 202
New Alloy No. 314
12 Foot Mill Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
3/16	.105	5/8	1.18
1/4	.188	3/4	1.70
5/16	.294	1	2.98
3/8	.425	1 1/4	4.69
7/16	.575	1 5/8	5.68
1/2	.754	1 1/2	6.76
9/16	.958		

STAINLESS STEEL

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING
STEEL

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS

ALUMINUM

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P.
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HARR
1000 S
Humb
Dir, D
TWX-4

CAMB
281 Al
TRow
Dir, Di
TWX-617

PHILADE
1955 W. F
BALDWIN
Dir, Dist.
TWX-215

COMMERCIAL BRONZE SQUARE BAR

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{8}$	.527	$\frac{5}{8}$	1.49
$\frac{1}{2}$	.968	1	3.84

COMMERCIAL BRONZE RECTANGULAR ROD

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{1}{2}$	.25	$\frac{3}{8} \times \frac{1}{2}$	.75
$\frac{5}{8}$	.31	$\frac{3}{4}$	1.12
1	.50	1	1.50
$1\frac{1}{2}$	.75	$1\frac{1}{4}$	1.87
2	1.00	$1\frac{1}{2}$	2.25
$\frac{3}{16} \times 1\frac{1}{2}$	1.12	2	3.00
2	1.50	$\frac{1}{2} \times \frac{5}{8}$	1.25
$\frac{1}{4} \times \frac{3}{8}$	.37	$\frac{3}{4}$	1.50
1	1.00	1	2.00
$1\frac{1}{4}$	1.25	$1\frac{1}{4}$	2.50
$1\frac{1}{2}$	1.50	2	4.00
2	2.00	$\frac{3}{4} \times 1\frac{1}{2}$	4.50
$\frac{5}{16} \times 1$	1.25		

ARCHITECTURAL BRONZE ROUND BAR

Diameter (in inches)	Pounds per Lineal Foot
$\frac{3}{8}$	.407
$\frac{1}{2}$	.728

Extruded
Old Alloy No. 280
New Alloy No. 385
16 Foot Lengths

BRASS

ARCHITECTURAL BRONZE SQUARE BAR

Extruded
Old Alloy No. 280
New Alloy No. 385
16 Foot Lengths

Size (in inches)	Pounds per Lineal Foot
$\frac{3}{8}$	.518
$\frac{1}{2}$	.921
$\frac{3}{4}$	2.072

ARCHITECTURAL BRONZE RECTANGULAR ROD

Old Alloy No. 280
New Alloy No. 385
16 Foot Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{3}{4}$	.345	$\frac{1}{4} \times \frac{3}{8}$	.342	$\frac{3}{8} \times \frac{3}{4}$	1.036
1	.461	$\frac{1}{2}$	.476	1	1.382
$1\frac{1}{4}$	.576	1	.921	$1\frac{1}{4}$	1.727
$1\frac{1}{2}$	.691	$1\frac{1}{4}$	1.151	2	2.763
$2\frac{1}{2}$	1.16	$1\frac{1}{2}$	1.38	$\frac{1}{2} \times \frac{3}{4}$	1.382
$\frac{3}{16} \times 1$	.689	$\frac{1}{4} \times 2$	1.842	$1\frac{1}{2}$	2.74
2	1.38	$2\frac{1}{2}$	2.303	2	3.684

PHOSPHUR BRONZE ROUND ROD

Spec. F
Old Alloy No. 610
New Alloy No. 544
12 Foot Mill Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{5}{32}$	.074	$\frac{1}{2}$	.754	$1\frac{1}{8}$	3.82
$\frac{3}{16}$	.106	$\frac{9}{16}$	.954	$1\frac{1}{4}$	4.71
$\frac{1}{4}$	.188	$\frac{5}{8}$	1.18	$1\frac{3}{8}$	5.70
$\frac{5}{16}$	.294	$\frac{3}{4}$	1.69	$1\frac{1}{2}$	6.78
$\frac{3}{8}$	.424	$\frac{7}{8}$	2.31	$1\frac{3}{4}$	9.23
$\frac{7}{16}$	.577	1	3.02	2	12.06

STAINLESS STEEL

TUBING • PIPE
 • SHAPES

HYDRAULIC TUBING
 STEEL

COPPER

MONEL-NICKEL

BRAZING PRODUCTS SOLDERING • WELDING

BRASS

ALUMINUM

EVERDUR BRONZE ROUND ROD

Cold Drawn
Alloy No. 1010
12 Foot Mill Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{3}{16}$	.1021	$\frac{3}{4}$	1.633
$\frac{1}{4}$	.1814	$\frac{7}{8}$	2.222
$\frac{5}{16}$	.2835	1	2.903
$\frac{3}{8}$	.4082	$1\frac{1}{8}$	3.674
$\frac{7}{16}$	.5556	$1\frac{1}{4}$	4.536
$\frac{1}{2}$	.7257	$1\frac{1}{2}$	6.531
$\frac{9}{16}$	.9185	$1\frac{3}{4}$	8.890
$\frac{5}{8}$	1.134	2	11.61

10% NICKEL SILVER ROUND ROD

Cold Drawn, Leaded
Old Alloy No. 825
New Alloy No. 796
12 Foot Mill Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{7}{16}$	.564	$\frac{7}{8}$	2.257
$\frac{1}{2}$	.737	1	2.948
$\frac{5}{8}$	1.51	$1\frac{1}{4}$	4.653
$\frac{3}{4}$	1.658		

12% NICKEL SILVER ROUND ROD

Cold Drawn, Leaded
Old Alloy No. 745
New Alloy No. 7921
12 Foot Mill Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.046	$\frac{1}{4}$	.184
$\frac{5}{32}$	.072	$\frac{5}{16}$	.288
$\frac{3}{16}$	.104	$\frac{3}{8}$	.415

BRASS

SOFT BRASS WIRE — COILED

New Alloy No. 260

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
.0254	.00184	.0907	.0237
.0320	.00294	.1144	.0376
.0403	.00467	.1285	.0475
.0508	.00742	.2500	.1808
.0641	.0018		

SPRING TEMPER BRASS WIRE — COILED

New Alloy No. 260

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
.0320	.00294	.0508	.00742
.0403	.00467	.0641	.0118
.0453	.00590	.1285	.0475

DURAFLEX PHOSPHOR BRONZE SPRING WIRE — COILED

Old Alloy No. 351

New Alloy No. 510

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
.0201	.00122	.0641	.0124
.0253	.00193	.0719	.0156
.0320	.00309	.0808	.0197
.0359	.00389	.0907	.0248
.0403	.00490	.1019	.0313
.0453	.00619	.1285	.0498
.0508	.00778	.1819	.1000
.0571	.00983		

STAINLESS STEEL

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING
STEEL

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS

ALUMINUM

YELLOW BRASS HARD DRAWN ROUND TUBING

Old Alloy No. 218
New Alloy No. 330
Mill Lengths

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot	O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.032	.0344	$\frac{1}{2}$	.049	.256
$\frac{3}{16}$	.032	.0576		.065	.327
$\frac{1}{4}$	.014	.0382		.125	.543
	.025	.065	$\frac{9}{16}$	.020	.126
	.032	.0807		.028	.173
	.035	.0871		.032	.196
	.042	.101		.042	.253
	.049	.114	$\frac{5}{8}$	.020	.140
	.065	.139		.025	.174
$\frac{5}{16}$	.014	.0484		.032	.220
	.025	.0832		.035	.239
	.032	.104		.042	.283
	.042	.131		.049	.327
	.035	.112		.065	.421
C	.049	.149		.083	.521
P.	.065	.186		.125	.723
M					
Y	$\frac{3}{8}$	.014 .0585	$\frac{11}{16}$	.028	.214
D			$\frac{3}{4}$	.020	.169
T	.018	.0744		.032	.266
	.020	.0822		.035	.290
	.028	.112		.042	.344
HARR					
1000 S					
Humb	.032	.127		.045	.367
Dir. D	.035	.138		.049	.398
TWX-	.042	.162		.058	.465
	.049	.185		.065	.515
	.065	.233		.083	.641
CAMB					
281 Al	$\frac{7}{16}$	.028 .133		.125	.904
TRowl					
Dir. Di	.032	.150		.028	.254
TWX-61	.042	.192	$\frac{13}{16}$	.020	.198
	.065	.280	$\frac{7}{8}$	.032	.312
				.035	.340
				.065	.609
PHILAD	$\frac{1}{2}$	.020 .111		.042	.435
1955 W.					
Baldwin	.025	.137			
Dir. Dist	.032	.173			
TWX-21	.035	.188	$\frac{15}{16}$		
	.042	.223			

(continued on next page)

BRASS

YELLOW BRASS HARD DRAWN ROUND TUBING (Continued)

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
---------------------	---------------------	---------------------------

1	.020	.227
	.025	.282
	.032	.359
-	.035	.391
	.042	.466
	.049	.550
	.065	.703
	.083	.881
	.125	1.27
$1\frac{1}{16}$	.042	.496
$1\frac{1}{8}$	.025	.318
	.042	.526
	.065	.797
	.125	1.45
$1\frac{1}{4}$	.025	.354
	.032	.451
	.049	.681
	.065	.891
	.072	.982
	.125	1.63
$1\frac{3}{8}$	.032	.497
	.042	.648
	.065	.986
	.125	1.81
$1\frac{1}{2}$	.025	.427
	.032	.544
	.035	.593
	.042	.709
	.065	1.08
	.125	1.99
$1\frac{5}{8}$	.045	.823
	.065	1.17
	.083	1.480
$1\frac{3}{4}$	.032	.636
	.065	1.27

Old Alloy No. 218 New Alloy No. 330 Mill Lengths

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
---------------------	---------------------	---------------------------

$1\frac{3}{4}$	.095	1.82
	.125	2.35
2	.032	.729
	.065	1.46
	.095	2.095
	.125	2.71
$2\frac{1}{8}$	.125	2.89
$2\frac{1}{4}$	.045	1.150
	.065	1.64
	.109	2.701
	.125	3.07
$2\frac{3}{8}$	.125	3.26
$2\frac{1}{2}$	.042	1.195
	.065	1.83
	.109	3.016
	.125	3.44
$2\frac{3}{4}$	.065	2.02
	.125	3.80
3	.049	1.67
	.065	2.21
	.120	4.00
	.125	4.16
$3\frac{1}{4}$	.065	2.39
	.125	4.52
$3\frac{1}{2}$	.065	2.58
	.125	4.88
	.134	5.22
$3\frac{3}{4}$	.125	5.24
	.065	2.96
	.125	5.61
$4\frac{1}{4}$	.125	5.97
$4\frac{1}{2}$	.120	6.083
	.125	6.33
$4\frac{3}{4}$	.125	6.61

(continued on next page)

STAINLESS STEEL

TUBING • PIPE
• SHAPES

HYDRAULIC TUBING
STEEL

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS

ALUMINUM

YELLOW BRASS HARD DRAWN ROUND TUBING (Continued)

Old Alloy No. 218
New Alloy No. 330
Mill Lengths

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot	O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
5	.065	3.71	6	.065	4.46
	.120	6.777		.125	8.50
	.125	7.05		6 $\frac{1}{4}$	8.86
5 $\frac{1}{4}$	.125	7.42	6 $\frac{1}{2}$	.125	9.22
5 $\frac{1}{2}$	.125	7.78	6 $\frac{3}{4}$	.125	9.58
5 $\frac{3}{4}$	.125	8.71	7	.125	9.94
			8	.125	11.38

ROUND BRASS TELESCOPE TUBING

Temper as Drawn
Old Alloy No. 218
New Alloy No. 330

O.D. (in inches)	Wall (in inches)	Length (in feet)	Pounds per Lineal Foot
1 $\frac{1}{16}$	.016	3	.0090
3 $\frac{3}{32}$	.014	3	.0130
1 $\frac{1}{8}$	.014	3	.0180
5 $\frac{5}{32}$	.014	3	.0230
3 $\frac{1}{16}$	.014	6	.0280
7 $\frac{7}{32}$	.014	6	.0332
1 $\frac{1}{4}$	.014	6	.0380
9 $\frac{9}{32}$	.014	6	.0433
5 $\frac{5}{16}$	.014	6	.0484
11 $\frac{11}{32}$	.014	6	.0534
3 $\frac{3}{8}$	.014	6	.0590
13 $\frac{13}{32}$	.014	6	.0635

HARF
1000 S
HUM
Dir. D
TWX-

CAME
281 Al
TRowl
Dir. D
TWX-61

PHILAD
1955 W. I
BALdwin
Dir. Dist.
TWX-215

BRASS

SQUARE BRASS TUBING

Old Alloy No. 42
New Alloy No. 260
12 Foot Lengths

Size (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.042	.280
$\frac{5}{8}$	.042	.350
$\frac{3}{4}$	.042	.420
1	.042	.570
$1\frac{1}{4}$	.042	.720

COMMERCIAL BRONZE SQUARE TUBING

Old Alloy No. 14
New Alloy No. 220

Size (in inches)	Wall (in inches)	Pounds per Lineal Foot
1	.065	.89

RED BRASS SQUARE TUBING

Formerly 85% Rich Low Brass
Old Alloy No. 24
New Alloy No. 230
16 Foot Lengths

Size (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.065	.430
$\frac{3}{4}$	.065	.680
1	.065	.920
3	.083	3.69

STAINLESS STEEL

HYDRAULIC TUBING
STEEL

COPPER

SHEET • PLATE ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING BRAZING PRODUCTS

BRASS

ALUMINUM

RED BRASS RECTANGULAR TUBING

Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{8} \times 1\frac{1}{4}$	.065	.740	1 $\times 1\frac{1}{2}$	.065	1.18
$\frac{1}{2} \times 1$	.065	.670	2	.065	1.41
$1\frac{1}{2}$	.065	.920	$1\frac{1}{4} \times 3$	.083	2.43
$\frac{5}{8} \times 1\frac{1}{4}$	.065	.870	$1\frac{3}{4} \times 3$	.083	2.84
$\frac{3}{4} \times 1\frac{1}{2}$	.065	1.18	4	.083	3.46
2	.065	1.41	5	.083	4.08

85% RED BRASS PIPE

Old Alloy No. 24
New Alloy No. 230

S.P.S. (in inches)	O.D. (in inches)	Wall (in inches)	I.D. (in inches)	Pounds per Lineal Foot
HAR	$\frac{1}{8}$	.405	.062	.253
1000 S	$\frac{1}{4}$	.540	.082	.447
HUM	$\frac{3}{8}$	.675	.090	.627
Dir. I	$\frac{1}{2}$	.840	.107	.934
TWX-	$\frac{3}{4}$	1.050	.114	1.27
	1	1.315	.126	1.78
CAME	$1\frac{1}{4}$	1.660	.146	2.63
281 A	$1\frac{1}{2}$	1.900	.150	3.13
TRow	2	2.375	.156	4.12
Dir. L	$2\frac{1}{2}$	2.875	.187	5.99
TWX-61	3	3.500	.219	8.56
	$3\frac{1}{2}$	4.000	.250	11.2
	4	4.500	.250	12.7
PHILAD	5	5.562	.250	15.8
1955 W.	6	6.625	.250	19.0
Baldwin	8	8.625	.312	30.9

BRASS

85% RED BRASS PIPE EXTRA HEAVY

Old Alloy No. 24
New Alloy No. 230

S.P.S. (in inches)	O.D. (in inches)	Wall (in inches)	I.D. (in inches)	Pounds per Lineal Foot
1/8	.405	.100	.205	.363
1/4	.540	.123	.294	.611
3/8	.675	.127	.421	.829
1/2	.840	.149	.542	1.23
5/8	1.050	.157	.736	1.67
1	1.315	.182	.951	2.46
1 1/4	1.660	.194	1.272	3.39
1 1/2	1.900	.203	1.494	4.10
2	2.375	.221	1.933	5.67
2 1/2	2.875	.280	2.315	8.66
3	3.500	.304	2.892	11.6
4	4.500	.341	3.818	16.9
6	6.625	.437	5.751	32.2
8	8.625	.500	7.625	48.4

EVERDUR PIPE

Alloy No. 1010
12 Foot Lengths

S.P.S. (in inches)	O.D. (in inches)	Wall (in inches)	I.D. (in inches)	Pounds per Lineal Foot
1	1.315	.126	1.063	1.75
1 1/2	1.900	.150	1.600	3.05
2	2.375	.156	2.602	4.03

STAINLESS STEEL

HYDRAULIC TUBING
STEEL

COPPER

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

BRASS

ALUMINUM

CONDENSER AND HEAT EXCHANGER TUBES

ALLOYS: ADMIRALTY
ARSENICAL COPPER
CUZINAL ALUMINUM & BRASS
ALUMINUM BRONZE 95/5
CUPRO NICKEL 10 %
CUPRO NICKEL 20 %
CUPRO NICKEL 30 %

OUTSIDE DIAMETERS: $\frac{5}{8}$ ", $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1"

WALL THICKNESS: .042, .049, .058, .065, .072, .083

LENGTHS: 1'-40' INCLUSIVE

THE ABOVE ALLOYS AND SIZES AS WELL AS OTHER UNLISTED ALLOYS AND SIZES ARE AVAILABLE AND QUOTED ON APPLICATION.

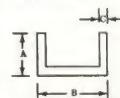
HALF HARD BRASS ANGLES

Drawn

Size (in inches)	Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$ X $\frac{1}{4}$	.045	.080
$\frac{3}{8}$ X $\frac{3}{8}$	.045	.117
$\frac{1}{2}$ X $\frac{1}{2}$	.062	.214
$\frac{5}{8}$ X $\frac{5}{8}$	.062	.270
$\frac{3}{4}$ X $\frac{3}{4}$	.062	.330
1 X 1	.062	.440
$1\frac{1}{2}$ X $1\frac{1}{2}$	.062	.690

HALF HARD BRASS CHANNELS

Drawn



A (in inches)	B (in inches)	C (in inches)	Pounds per Lineal Foot
$\frac{3}{8}$	$\frac{3}{8}$	.040	.154
$\frac{3}{8}$	$\frac{3}{8}$	.064	.235
$\frac{3}{8}$	$\frac{1}{2}$	.081	.330
$\frac{3}{8}$	$\frac{5}{8}$	.081	.360
$\frac{3}{8}$	$\frac{3}{4}$	.040	.208
$\frac{1}{2}$	1	.081	.540
$\frac{3}{4}$	$\frac{3}{4}$	.064	.500

BRASS

ARCHITECTURAL BRONZE ANGLE EXTRUDED

Old Alloy No. 280
New Alloy No. 385

Size (in inches)	Thickness (in inches)	Pounds Per Foot
$\frac{3}{8} \times \frac{3}{8}$	$\frac{3}{32}$	.22
$\frac{1}{2} \times \frac{1}{2}$	$\frac{3}{32}$	.31
	$\frac{1}{8}$	.4035
$\frac{3}{4} \times \frac{3}{4}$	$\frac{3}{32}$	.48
	$\frac{1}{8}$	.5600
1 \times 1	$\frac{1}{8}$	.8646
	$\frac{3}{16}$	1.25
$1\frac{1}{4} \times 1\frac{1}{4}$	$\frac{1}{8}$	1.095
	$\frac{1}{4}$	2.10
$1\frac{1}{2} \times 1\frac{1}{2}$	$\frac{1}{8}$	1.326
	$\frac{3}{16}$	1.92
	$\frac{1}{4}$	2.650
2 \times 2	$\frac{1}{8}$	1.787
	$\frac{1}{4}$	3.42
	$\frac{3}{16}$	2.61
$2\frac{1}{2} \times 2\frac{1}{2}$	$\frac{3}{16}$	3.44
	$\frac{1}{4}$	4.35
3 \times 3	$\frac{1}{4}$	5.25

ARCHITECTURAL BRONZE UNEQUAL ANGLES

Extruded
Old Alloy No. 280
New Alloy No. 385
16 Foot Lengths

Size (in inches)	Thickness (in inches)	Pounds Per Foot
$\frac{1}{2} \times \frac{3}{4}$	.125	.52
1	.125	.65
$1\frac{1}{2}$	.125	.84
$\frac{3}{4} \times 1$	.125	.75
$1\frac{1}{2}$	.125	.97
1 $\times 1\frac{1}{4}$	.125	1.00
$1\frac{1}{2}$	.125	1.10
2	.125	1.33

STAINLESS STEEL

HYDRAULIC TUBING
STEEL

COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

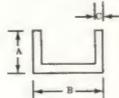
BRASS

ALUMINUM

BRASS

ARCHITECTURAL BRONZE CHANNELS

Extruded
Old Alloy No. 280
New Alloy No. 385
16 Foot Lengths



A (in inches)	B (in inches)	C (in inches)	Pounds per Lineal Foot
$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{32}$	.33
$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{32}$	.36
$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{32}$	.45
$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{8}$	.57
$\frac{3}{8}$	1	$\frac{1}{8}$	.69
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{32}$	.45
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{32}$	.52
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{8}$	.68
$\frac{1}{2}$	1	$\frac{1}{8}$	.84
$\frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	.93
$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	1.02
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{32}$	.68
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{8}$	.90
$\frac{3}{4}$	1	$\frac{1}{8}$	1.04
$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	1.26
1	1	$\frac{1}{8}$	1.25
1	$1\frac{1}{2}$	$\frac{1}{8}$	1.45
$1\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	1.80
1	2	$\frac{1}{8}$	1.75

CAM

281 A

TRow

Dir. L

TWX-61

PHILAD

1955 W. I

Baldwin

Dir. Dist.

TWX-215

sheet • plate • rod • shapes • wire

MONEL-NICKEL

BRAZING PRODUCTS

STAINLESS STEEL

rod • wide

tubing • pipe

HYDRAULIC TUBING
STEEL

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COPPER



WHAT DO YOU WANT TO KNOW ABOUT

COPPER

If you machine, weld, roll, bend, punch or fabricate copper alloys in any way, you probably run into problems.

Perhaps our own technical men have the answer for you. You may find the information you need in one of the free technical booklets of the Anaconda American Brass Company. Some of this literature is listed on the next page.

COPPER

ALUMINUM

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Stocks change from time to time. If the material you want is not listed here, call or write our office nearest you for additional information.

LITERATURE ON COPPER

Here are a few of the booklets published by the Anaconda American Brass Company that are available to you. This literature is free, and may be had by calling or writing our office nearest you.

Anaconda Copper and Copper Alloys

*Data for the user of Copper &
Copper Alloys*

*Copper & Copper Alloy
Metalexicon*

*PRACTICAL SUGGESTIONS for
Machining Copper, Brass
Bronze and Nickel Silver*

*Tubes and Plates for Condens-
ers and Heat Exchangers*

*Copper for Electrical
Conductors*

*Rods for Screw Machine
Products*

*Welding Rods and Procedures
for Welding Copper and
Copper Alloys*

Copper Tubes and Fittings

*Anaconda through-wall
flashing*

*Extruded Architectural Bronze
Thresholds*

*EVEDUR alloys, physical
properties and applications*

EVEDUR Electrical Conduit

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Syracuse, N. Y.HOrward 3-6241	
Windsor, Conn.phone 688-4921	
Rochester, N. Y.BUtler 8-2141	

STAINLESS STEEL

SHEET

ROD • WIRE

TUBING • PIPE

HYDRAULIC TUBING
STEEL

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**COPPER
SHEET
WEIGHT TABLE**
Pounds per
Square Foot
**OLD ALLOY NO. 100
NEW ALLOY NO. 110**

Thickness (in inches)	Nearest B&S Gauge	Pounds per Sq. Ft.	Thickness (in inches)	Nearest B&S Gauge	Pounds per Sq. Ft.
.500	—	23.18	.0970	10	4 1/2
.375	—	17.39	.0937	—	4.347
.3451	2/0	16	.0863	11	4
.3235	1/0	15	.0755	13	3 1/2
.3125	—	14.49	.0647	14	3
.3019	1	14	.0625	—	2.898
.2804	1	13	.0593	15	2 3/4
.2588	2	12	.0539	16	2 1/2
.250	—	11.59	.0485	16	2 1/4
.2372	3	11	.0431	17	2
.2157	4	10	.0377	19	1 3/4
.2049	4	9 1/2	.0323	20	1 1/2
.1941	4	9	.0270	21	1 1/4
.1875	—	8.694	.0243	22	1 1/8
.1833	5	8 1/2	.0216	23	1
.1725	5	8	.0189	25	7/8
.1617	6	7 1/2	.0162	26	3/4
.1510	7	7	.0135	27	5/8
.1402	7	6 1/2	.0108	29	1/2
.1294	8	6	.0081	32	3/8
.125	—	5.796	.0054	35	1/4
.1186	9	5 1/2	.0027	41	1/8
.1078	10	5			

COPPER

ALUMINUM

BRASS

COPPER

SOFT COPPER STRIP — COILED

Old Alloy No. 100
New Alloy No. 110

Thickness (in inches)	Width in inches	Pounds per Lineal Foot
.005	12	.2318
.0063	12	.2921
6 OZ. (.0081)	12	.37
8 OZ. (.0108)	12	.500
10 OZ. (.0135)	12	.625
	20	1.01
	24	1.25
12 OZ. (.0162)	12	.750
	14	.875
14 OZ. (.0189)	12	.875
16 OZ. (.0216)	6	.500
	8	.667
	10	.833
	12	1.000
	14	1.167
	15	1.250
	16	1.333
	18	1.500
	20	1.667
18 OZ. (.0243)	6	.563
	8	.750
	12	1.125
	14	1.316
24 OZ. (.0323)	8	.99
	12	1.50
	16	2.00
30 OZ. (.0404)	12	1.87
32 OZ. (.0431)	12	2.00
	14	2.33

COPPER

SOFT COPPER SHEET — FLAT

Old Alloy No. 100
New Alloy No. 110

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
8 OZ. (.0108)	30 X 60	6.25	48 OZ. (.0647)	30 X 60	38.00
	30 X 96	10.00		30 X 96	60.00
	36 X 96	12.00		36 X 96	72.00
10 OZ. (.0135)	30 X 60	7.81		48 X 72	72.00
	30 X 96	12.50		48 X 96	96.00
12 OZ. (.0162)	30 X 96	15.00		48 X 120	120.00
	36 X 96	18.00		60 X 120	150.00
14 OZ. (.0189)	30 X 96	17.50	52 OZ. (.0720)	30 X 96	66.77
	36 X 96	21.00	56 OZ. (.0755)	30 X 60	44.00
16 OZ. (.0216)	24 X 96	16.00		60 X 120	175.00
	24 X 120	20.00	58 OZ. (.0782)	30 X 96	72.50
	30 X 96	20.00	64 OZ. (.0863)	30 X 60	50.00
	30 X 120	25.00		48 X 96	128.00
	36 X 96	24.00		48 X 120	160.00
	36 X 120	30.00	4½ LB. (.097)	48 X 72	108.00
18 OZ. (.0243)	30 X 96	22.50		48 X 144	216.00
	36 X 96	27.00	5 LB. (.0178)	48 X 72	120.00
20 OZ. (.0270)	30 X 96	25.00	6 LB. (.1294)	48 X 72	144.00
	36 X 96	30.00		48 X 96	192.00
24 OZ. (.0323)	24 X 96	24.00		48 X 120	240.00
	30 X 96	30.00		48 X 144	288.00
	36 X 96	36.00		60 X 120	300.00
	48 X 96	48.00		72 X 120	360.00
32 OZ. (.0431)	30 X 96	40.00	9 LB. (.1941)	48 X 72	216.00
	36 X 96	48.00	12 LB. (.2588)	48 X 72	288.00
	48 X 120	80.00		3½" (.0937)	36 X 96 104.27
36 OZ. (.0485)	36 X 96	54.00		1½" (.1250)	36 X 96 139.10
	48 X 72	54.00		3½" (.1875)	36 X 96 208.66
38 OZ. (.0513)	36 X 96	57.00		¼" (.250)	36 X 96 278.21
40 OZ. (.0539)	30 X 60	31.00		48 X 120	463.68
	48 X 120	100.00		48 X 144	556.42
	60 X 120	125.00		48 X 120	217.35
44 OZ. (.0593)	30 X 96	55.00	¾" (.3750)	30 X 60	695.52

STAINLESS STEEL

ROD • WIRE

TUBING • PIPE

HYDRAULIC TUBING
STEEL

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SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

**FOUNDRY • WELDING
BRAZING PRODUCTS**

COPPER**COLD ROLLED COPPER SHEET — FLAT**

Old Alloy No. 100
New Alloy No. 110

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet	
8 OZ. (.0108)	24 X 96	8.00	24 OZ. (.0323)	48 X 96	48.00	
	30 X 96	10.00		32 OZ. (.0431)	30 X 96	40.00
10 OZ. (.0135)	30 X 96	12.52		36 X 96	48.00	
	36 X 96	15.00		48 X 96	64.00	
12 OZ. (.0162)	30 X 96	15.00		48 X 120	79.94	
	36 X 96	18.00	36 OZ. (.0485)	36 X 96	54.00	
14 OZ. (.0189)	30 X 96	17.50	38 OZ. (.0512)	36 X 96	57.00	
	36 X 96	21.00	40 OZ. (.0539)	48 X 120	100.00	
16 OZ. (.0216)	10 X 96	6.68		60 X 120	125.00	
	12 X 96	8.01	48 OZ. (.0647)	30 X 96	60.00	
	12 X 120	10.00		36 X 96	72.00	
	14 X 96	9.33		48 X 96	72.00	
	15 X 96	10.01		48 X 120	120.00	
	15 X 120	12.5		60 X 144	180.00	
	18 X 96	12.00	64 OZ. (.0863)	60 X 144	240.00	
	18 X 120	15.03		.093	36 X 96 103.49	
	20 X 96	13.34			48 X 96 137.99	
	24 X 96	16.00	4½ LB. (.097)	12 X 144	54.00	
	24 X 120	20.00	5 LB (.1078)	60 X 144	300.00	
	30 X 96	20.00	6 LB. (.1294)	12 X 144	72.00	
	30 X 120	25.00			60 X 144 360.00	
	36 X 96	24.00	⅛"	(.1250)	36 X 96 139.10	
	36 X 120	30.00			48 X 96 185.47	
18 OZ. (.0243)	30 X 96	22.50	¾₁₆"	(.1875)	36 X 96 208.66	
	36 X 96	27.00	¼"	(.2500)	12 X 144 144.00	
20 OZ. (.0270)	30 X 96	25.00			36 X 96 278.16	
	36 X 96	30.00	៥₁₁ₖ"	(.3125)	12 X 144 180.00	
24 OZ. (.0323)	24 X 96	24.00	¾₉"	(.3750)	12 X 144 216.00	
	30 X 96	30.00	½"	(.5000)	12 X 144 288.00	
	36 X 96	36.00			30 X 96 463.68	
	36 X 120	45.00				

COLD ROLLED COPPER SHEET

Tinned One Side
Old Alloy No. 100
New Alloy No. 110

Thickness (in inches)	Size in inches	Pounds per Sheet
24 OZ. (.0323)	36 X 96	36.00
32 OZ. (.0431)	48 X 96	48.00

COPPER

LEAD COATED COPPER SHEET

Flat, Hot Rolled*
Lead Coated Both Sides

Thickness (in inches)	Size in inches	Approx. Weight per Sheet
16 OZ. (.0216)	30 X 96	20 LBS.
	36 X 96	24 LBS.
	36 X 120	30 LBS.

Approximate weight of lead per 100 square feet for both sides, 12 to 15 pounds.

*Can also be furnished Cold Rolled.

COPPER ROUND ROD — HARD DRAWN


Old Alloy No. 100
New Alloy No. 110
12 Foot Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/8	.0474	* 5/8	1.185	1 3/8	5.738
3/16	.1067	1 1/16	1.434	1 1/2	6.828
1/4	.1897	3/4	1.707	1 3/4	9.294
5/16	.2964	1 3/16	2.003	2	12.14
3/8	.4268	7/8	2.324	2 1/4	15.36
7/16	.5809	1	3.035	2 1/2	18.97
1/2	.7587	1 1/8	3.841	3	27.31
9/16	.9602	1 1/4	4.742		

*Also available in Leaded Copper.

COPPER SQUARE BAR — BUS BAR TEMPER


Old Alloy No. 100
New Alloy No. 110
12 Foot Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
3/16	.1358	1/2	.9660	1 1/4	6.038
1/4	.2415	5/8	1.509	1 1/2	8.694
5/16	.3773	3/4	2.174	2	15.46
7/16	.5434	1	3.864		

STAINLESS STEEL

ROD • WIRE

TUBING • PIPE

HYDRAULIC TUBING
STEEL

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

SHEET • PLATE
ROD • SHAPES • WIRE

COPPER

ALUMINUM

COPPER RECTANGULAR WIRE AND STRIP

Hard Alloy No. 100
New Alloy No. 110
Square Edge
12 Foot Mill Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{16} \times \frac{1}{4}$	.0604	$\frac{1}{16} \times \frac{3}{4}$	.1811	$\frac{3}{32} \times \frac{3}{4}$	.257
$\frac{1}{2}$	.1208	1	.2415	1	.363
$\frac{5}{8}$	.1509	$\frac{3}{32} \times \frac{1}{2}$	.182	$1\frac{1}{4}$	.4528
			.2264		

COPPER RECTANGULAR BAR — BUS BAR TEMPER

Square Edge
Old Alloy No. 100
New Alloy No. 110
12 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{3}{8}$	.1812	$\frac{1}{4} \times \frac{3}{4}^*$	.7245	$\frac{3}{8} \times 4$	5.796
$\frac{1}{2}$	.2415	$\frac{7}{8}$	.845	6	8.694
$\frac{5}{8}$	.3019	1 *	.9660	$\frac{1}{2} \times \frac{3}{4}$	1.45
$\frac{3}{4}$	.3623	$1\frac{1}{4}$	1.208	1	1.932
$\frac{7}{8}$	.4226	$1\frac{1}{2}^*$	1.449	$1\frac{1}{4}$	2.415
1	.4830	$1\frac{3}{4}$	1.691	$1\frac{1}{2}$	2.898
$1\frac{1}{4}$	.6038	2 *	1.932	2	3.864
$1\frac{1}{2}$	.7245	$2\frac{1}{4}$	2.174	$2\frac{1}{2}$	3.62
$1\frac{3}{4}$	.8453	$2\frac{1}{2}$	2.415	3	5.796
2	.9660	3 *	2.898	$3\frac{1}{2}$	6.762
$2\frac{1}{2}$	1.208	$3\frac{1}{2}^*$	3.38	4	7.728
3	1.449	4 *	3.864	5	9.660
4	1.932	5 *	4.830	6	11.59
$\frac{3}{16} \times \frac{1}{2}^*$	.3623	6 *	5.796	8	15.46
$\frac{5}{8}^*$	.4528	$\frac{5}{16} \times 2$	2.415	$\frac{3}{4} \times 1\frac{1}{2}$	4.34
$\frac{3}{4}^*$	.5434	$\frac{3}{8} \times \frac{1}{2}$	.7245	2	5.796
$\frac{7}{8}$	.6339	$\frac{3}{4}$	1.087	6	17.39
1	.7245	1	1.449	1×2	7.728
$1\frac{1}{4}$	.9056	$\frac{3}{8} \times 1\frac{1}{2}$	2.174	$2\frac{1}{4}$	8.694
$1\frac{1}{2}$	1.087	2	2.898	$2\frac{1}{2}$	9.660
$1\frac{3}{4}$	1.268	$2\frac{1}{2}$	3.623	3	11.59
$\frac{3}{16} \times 2$	1.449	3	4.347	5	19.32
$\frac{1}{4} \times \frac{1}{2}^*$	.4830	$3\frac{1}{2}$	5.087		

*Also available with round edge.

COPPER

COPPER

COPPER ROUND WIRE — SOFT

Old Alloy No. 100
New Alloy No. 110

B & S Gauge	Size in inches	Feet per Pound	B & S Gauge	Size in inches	Feet per Pound	B & S Gauge	Size in inches	Feet per Pound
26	.016	1300.0	18	.0403	203.4	10	.102	31.82
24	.020	817.7	17	.045	161.3	8	.128	20.01
23	.023	666.7	16	.051	127.9	6	.162	12.58
22	.025	514.2	14	.064	80.44	4	.203	7.914
20	.032	323.4	12	.080	50.01	$\frac{1}{4}$ "	.250	5.29
19	.036	256.5	11	.093	40.12			

COPPER TUBING HARD DRAWN Outside Diameter Sizes

Round, Seamless
12 Foot Mill Lengths
Old Alloy No. 103
New Alloy No. 122

I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{3}{16}$	.032	.061	$1\frac{1}{2}$	.065	1.140
$\frac{1}{4}$	.035	.092		.083	1.43
	.042	.166	$1\frac{5}{8}$	.083	1.55
$\frac{5}{16}$	.035	.119	$1\frac{3}{4}$	.095	1.915
$\frac{3}{8}$	.042	.170	2	.065	1.530
$\frac{7}{16}$	.042	.202		.083	1.940
$\frac{1}{2}$	.032	.182	$2\frac{1}{2}$	.065	1.930
	.049	.269		.109	3.170
$\frac{5}{8}$	.049	.343	3	.083	2.95
$\frac{3}{4}$	.058	.488	$3\frac{1}{2}$	.083	3.45
$\frac{7}{8}$	.058	.576	4	.083	3.96
	.065	.641		.134	6.30
1	.035	.411	$4\frac{1}{2}$	.134	7.12
	.065	.739	5	.065	3.90
$1\frac{1}{8}$	.065	.838	6	.134	9.56
$1\frac{1}{4}$	.072	1.030			

20 FOOT LENGTHS

$\frac{3}{8}$.065	.246	$\frac{3}{4}$.065	.542
$\frac{1}{2}$.065	.344	$1\frac{1}{4}$.125	1.00
$\frac{5}{8}$.065	.443			

STAINLESS STEEL

ROD • WIRE

TUBING • PIPE

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SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

COPPER

ALUMINUM

COPPER TUBING HARD DRAWN Inside Diameter Sizes

Round, Seamless
20 Foot Mill Lengths
Old Alloy No. 103
New Alloy No. 122

I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1 1/4	.109	1.80	3 1/2	.109	4.79
	.134	2.25	4	.083	4.12
1 1/2	.134	2.67		.134	6.74
2	.065	1.63	4 1/2	.134	7.56
	.083	2.11	5	.134	8.37
	.134	3.48	6	.134	9.99
	.165	4.34	7	.109	9.439
2 1/2	.109	3.46	8	.109	10.75
3	.065	2.42		.134	13.27
	.083	3.12		.165	16.40
	.109	4.12			
	.134	5.11			

TYPE "K" WATER TUBING — SOFT

Old Alloy No. 103
New Alloy No. 122

60 Foot Coils

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/4	.375	.305	.035	.145
5/16	.500	.402	.049	.269
1/2	.625	.527	.049	.344
5/8	.750	.652	.049	.418
3/4	.875	.745	.065	.641
1	1.125	.995	.065	.839
1 1/4	1.375	1.245	.065	1.04
1 1/2	1.625	1.481	.072	1.36

20 Foot Straight Lengths

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
2	2.125	1.959	.083	2.06
2 1/2	2.625	2.435	.095	2.93
3	3.125	2.907	.109	4.00
3 1/2	3.625	3.385	.120	5.12

COPPER

TYPE "K" WATER TUBING — HARD

Old Alloy No. 103
New Alloy No. 122
20 Foot Lengths

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/4	.375	.277	.035	.134
3/8	.500	.402	.049	.269
1/2	.625	.527	.049	.344
5/8	.750	.652	.049	.418
3/4	.875	.745	.065	.641
1	1.125	.995	.065	.839
1 1/4	1.375	1.245	.065	1.04
1 1/2	1.625	1.481	.072	1.36
2	2.125	1.959	.083	2.06
2 1/2	2.625	2.435	.095	2.92
3	3.125	2.907	.109	4.00
3 1/2	3.625	3.385	.120	5.12
4	4.125	3.857	.134	6.51
5	5.125	4.805	.160	9.67
6	6.125	5.741	.192	13.87

TYPE "L" WATER TUBING — SOFT

Old Alloy No. 103
New Alloy No. 122

60 Foot Coils

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/4	.375	.315	.030	.126
3/8	.500	.430	.035	.198
1/2	.625	.545	.040	.285
5/8	.750	.622	.049	.418
3/4	.875	.785	.045	.455

20 Foot Straight Lengths

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1	1.125	1.025	.050	.655
1 1/4	1.375	1.265	.055	.884
1 1/2	1.625	1.505	.060	1.14

STAINLESS STEEL

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MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

SHEET • PLATE
ROD • SHAPES • WIRE

COPPER

ALUMINUM

TYPE "L" WATER TUBING — HARD

Old Alloy No. 103
New Alloy No. 122
20 Foot Lengths

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/4	.375	.315	.030	.126
5/16	.500	.430	.035	.198
1/2	.625	.545	.040	.285
5/8	.750	.666	.042	.362
3/4	.875	.785	.045	.455
1	1.125	1.025	.050	.655
1 1/4	1.375	1.265	.055	.884
1 1/2	1.625	1.505	.060	1.14
2	2.125	1.985	.070	1.75
2 1/2	2.625	2.465	.080	2.48
3	3.125	2.945	.090	3.33
4	4.125	3.905	.110	5.38
5	5.125	4.875	.125	7.61
6	6.125	5.845	.140	10.20

TYPE "M" WATER TUBING — HARD

20 Foot Lengths
Old Alloy No. 103
New Alloy No. 122

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
5/8	.500	.450	.025	.145
1 1/4	1.375	1.291	.042	.682
1 1/2	1.625	1.527	.049	.940
2	2.125	2.009	.058	1.46
2 1/2	2.625	2.495	.065	2.03
3	3.125	2.981	.072	2.68
3 1/2	3.625	3.459	.083	3.58
4	4.125	3.935	.095	4.66
5	5.125	4.907	.109	6.66
6	6.125	5.881	.122	8.92
8	8.125	7.785	.170	16.5
10	10.125	9.701	.212	25.6

COPPER

COPPER DRAINAGE TUBING

Alloy No. 122

Nominal Size (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1 1/4	1.375	1.295	.040	.65
1 1/2	1.625	1.541	.042	.809
2	2.125	2.041	.042	1.07
3	3.125	3.035	.045	1.69
4	4.125	4.009	.058	2.87
5	5.125	4.981	.072	4.43
6	6.125	5.959	.083	6.10

COPPER REFRIGERATION TUBING

50 Foot Coils
Sealed and Dehydrated
Bulk Packed

Old Alloy No. 103
New Alloy No. 122

O.D. (in inches)	Wall (in inches)	Weight per 50 Ft. Coil	O.D. (in inches)	Wall (in inches)	Weight per 50 Ft. Coil
1/8	.030	1.75	3/8	.032	6.70
3/16	.030	2.90	1/2	.032	9.10
1/4	.030	4.00	5/8	.035	12.60
5/16	.032	5.45	3/4	.035	15.25

COPPER REFRIGERATION TUBING

50 Foot Coils
Sealed and Dehydrated
Individually Packaged
1 Coil per Carton

Old Alloy No. 103
New Alloy No. 122

O.D. (in inches)	Wall (in inches)	Weight per 50 Ft. Coil	O.D. (in inches)	Wall (in inches)	Weight per 50 Ft. Coil
1/8	.035	1.90	7/16	.035	8.60
3/16	.035	3.25	1/2	.035	9.90
1/4	.035	4.60	5/8	.035	12.50
5/16	.035	5.90	3/4	.035	15.25
3/8	.035	7.25			

STAINLESS STEEL

HYDRAULIC TUBING
STEEL

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SHEET • PLATE

ROD • SHAPES • WIRE

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FOUNDRY • WELDING
BRAZING PRODUCTS

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SOFT COPPER TUBING — SEAMLESS

50 Foot Coils
Open ends
For Automotive,
Oil Burner, and
General Use
Old Alloy No. 103
New Alloy No. 122

O.D. (in inches)	Wall (in inches)	Weight per 50 Ft. Coil	O.D. (in inches)	Wall (in inches)	Weight per 50 Ft. Coil
$\frac{1}{8}$	.032	1.81	$\frac{3}{8}$	.049	9.75
	.035	1.92		.065	12.25
$\frac{3}{16}$	.032	3.03		.094 *	10.63 †
	.035	3.25	$\frac{1}{2}$	.035	9.90
$\frac{1}{4}$	.032	4.25		.049	13.45
	.035	4.58		.065	17.20
$\frac{5}{16}$	.032	5.45		.094	22.00
	.035	5.90	$\frac{3}{4}$	.035	15.25
$\frac{3}{8}$	.032	6.70	1	.035	20.55
	.035	7.25			

*33 foot Coil.

†Weight of 33 foot Coil.

COPPER TUBING — HARD DRAWN

Round
12-14 Foot Random Lengths
Old Alloy No. 103
New Alloy No. 122

O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot	O.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.032	.036	$1\frac{3}{4}$	.120	2.38
$\frac{3}{8}$	.032	.134	$1\frac{3}{4}$	.125	2.47
$\frac{3}{8}$	.035	.118	2	.065	1.53
$\frac{1}{2}$	.065	.344	2	.083	1.94
$\frac{5}{8}$	.065	.443	$2\frac{1}{8}$	.065	1.63
$\frac{5}{8}$	.083	.548	$2\frac{1}{4}$	.134	3.45
$\frac{3}{4}$	.065	.542	4	.065	3.12
1	.065	.740	$5\frac{9}{16}$	.068	4.55

COPPER

COPPER PIPE

12 and 20 Foot Lengths
Old Alloy No. 103
New Alloy No. 122

S.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.405	.281	.062	.259
$\frac{1}{4}$	.540	.376	.082	.457
$\frac{3}{8}$	.675	.495	.090	.641
$\frac{1}{2}$	.840	.626	.107	.955
$\frac{3}{4}$	1.050	.822	.114	1.30
1	1.315	1.063	.126	1.82
$1\frac{1}{4}$	1.660	1.368	.146	2.69
$1\frac{1}{2}$	1.900	1.600	.150	3.20
2	2.375	2.063	.156	4.22
$2\frac{1}{2}$	2.875	2.501	.187	6.12
3	3.500	3.062	.219	8.75
$3\frac{1}{2}$	4.000	3.500	.250	11.4
4	4.500	4.000	.250	12.94
5	5.562	5.062	.250	16.20
6	6.625	6.125	.250	19.41
8	8.625	8.001	.312	31.63

EXTRA HEAVY COPPER PIPE

12 Foot Lengths
Old Alloy No. 103
New Alloy No. 122

S.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.405	.205	.100	.371
$\frac{1}{4}$	.540	.294	.123	.625
$\frac{3}{8}$	.675	.421	.127	.847
$\frac{1}{2}$	.840	.542	.149	1.25
$\frac{3}{4}$	1.050	.736	.157	1.71
1	1.315	.951	.182	2.51
$1\frac{1}{4}$	1.660	1.272	.194	3.46
$1\frac{1}{2}$	1.900	1.494	.203	4.19
2	2.375	1.933	.221	5.80
$2\frac{1}{2}$	2.875	2.315	.280	8.85
3	3.500	2.892	.304	11.8
4	4.500	3.818	.341	17.3
5	5.562	4.812	.375	23.7
6	6.625	5.751	.437	32.9
8	8.625	7.625	.500	49.5

COPPER ANODES

Copper anodes can be supplied in a wide range of thicknesses, widths and lengths. They can be furnished flat or oval, drilled or plain. Please write or telephone for complete information.

STAINLESS STEEL

HYDRAULIC TUBING
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MONEL-NICKEL

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

BRAZING PRODUCTS
WELDING

COPPER

M ALUMINUM

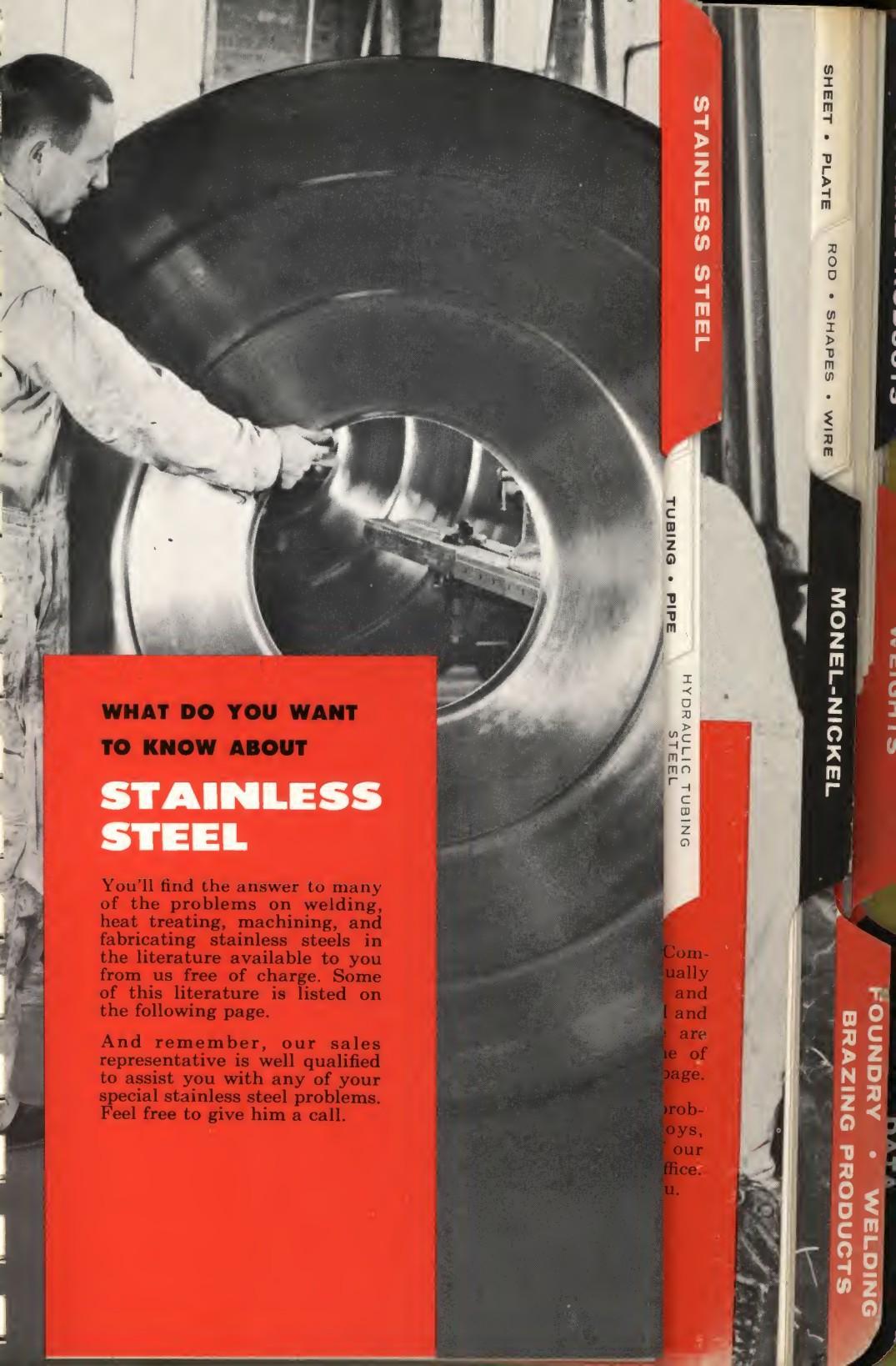
BRASS

COPPER

COPPER and COPPER ALLOYS

Old and New Alloy Designations

Old Alloy No.	New Alloy No.	Old Alloy No.	New Alloy No.	Old Alloy No.	New Alloy No.
2	2101	239	3481	448	462
4	210	241	3471	450	464
7	DROPPED	243	353	452	4641
14	220	244	350	474	405
21	226	245	3531	477	4221
24	230	246	3532	481	470
29	234	247	3651	510	667
32	240	250	377	515	6670
37	250	257	331	602	DROPPED
40	2501	260	3713	603	4761
42	260	262	3711	605	482
43	DROPPED	267	320	607	DROPPED
44	2611	269	348	610	544
45	261	270	3712	612	485
51	262	271	360	702	715
58	270	274	365	704	7151
59	268	278	3801	707	7152
60	2681	280	385	712	7101
61	274	282	332	713	710
65	2802	286	316	716	735
66	280	293	371	719	752
68	2801	301	509	721	7641
100	110	302	5090	724	770
101	125	303	5091	736	7091
103	122	305	510	739	754
104	120	314	5092	741	7622
107	DROPPED	320	5181	742	762
108	142	322	532	743	766
109	DROPPED	351	510	744	757
110	1161	353	521	745	7921
111	113	354	524	748	707
112	114	356	505	749	7401
113	116	358	5014	750	740
117	1171	361	507	751	745
119	DROPPED	363	5012	755	706
120	102	364	5072	758	7902
121	101	365	5073	760	7821
122	104	366	5071	763	7051
123	107	367	5070	766	704
124	1101	368	5020	767	7041
126	187	372	189	787	702
127	145	379	534	795	7901
128	DROPPED	404	413	821	7761
129	1870	410	411	823	7741
130	1102	411	4191	825	7981
132	147	412	415	828	773
134	150	419	4111	831	7021
201	310	420	4222	850	7321
202	314	421	4301	925	DROPPED
205	3201	422	430	958	162
218	330	435	435	959	1620
220	3301	436	436	960	1621
223	3302	439	443	961	1622
226	335	440	444	965	165
229	340	441	445	999	182
235	342	442	442		
238	356	444		DROPPED	



STAINLESS STEEL

TUBING • PIPE

HYDRAULIC TUBING
STEEL

**WHAT DO YOU WANT
TO KNOW ABOUT
STAINLESS
STEEL**

You'll find the answer to many of the problems on welding, heat treating, machining, and fabricating stainless steels in the literature available to you from us free of charge. Some of this literature is listed on the following page.

And remember, our sales representative is well qualified to assist you with any of your special stainless steel problems. Feel free to give him a call.

SHEET • PLATE ROD • SHAPES • WIRE

MONEL-NICKEL

**FOUNDRY • WELDING
BRAZING PRODUCTS**

STAINLESS STEEL

ALUMINUM
STAINLESS STEEL

BRASS

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Stocks change from time to time. If the material you want is not listed here, call or write our office nearest you for additional information.

LITERATURE ON STAINLESS STEEL

Literature is free, and may be had by calling our representative, or writing our nearest warehouse sales office.

- Cleaning of Stainless Steel
- Stainless Steels
- Stainless Steel Sheets, Strips, Plates
- Stainless Steel Bar and Wire
- Here's the Stainless Bar Grade You Want
- What Grade of Stainless Sheets Will Do Your Job
- Precipitation-Hardening Stainless Steels
- ELC Stainless Steels
- Welding and Soldering of Stainless Steels
- Machining of Stainless Steels
- Surface Finishing of Stainless Steel
- Heat Treating, Forging and Pickling of Stainless Steels
- Stainless Fabricating Tips
- Stainless Steel Pipe and Tube

TELEPHONES OF OFFICES AND WAREHOUSES

- New York, New York
- WOrth 4-2800
- Carteret, N. J.YOrktown 9-2000
- Cambridge, Mass.TRowbridge 6-4680
- Harrison N. J.HUmboldt 5-5900
- Philadelphia, Pa.BAldwin 9-2323
- Baltimore, Md.WIndsor 4-2000
- Buffalo, N. Y.TRiangle 6-3100
- Syracuse, N. Y.HOrward 3-6241
- Windsor, Conn.'phone 688-4921
- Rochester, N. Y.BUtler 8-2141

STAINLESS STEEL SHEET WEIGHT TABLE

Pounds per
Square Foot

**ESTIMATED WEIGHTS ARE BASED ON CHROMIUM NICKEL
STAINLESS STEEL—42.0 lbs. per sq. ft., per inch of thickness**

Nominal Gauge U.S.S.	Thickness Range Dec. Inch	Nominal Thickness Dec. Inch	Nominal Weight Pounds Per Square Foot	Continuous Mill* Rolling Thickness Dec. Inch	Continuous Mill Weight* Pounds Per Square Foot
8	.1874 - .1601	.1719	7.2188		
9	.1600 - .1451	.1563	6.5625		
10	.1450 - .1301	.1406	5.9062		
-	-	.135	5.670		
11	.1300 - .1141	.125	5.25	.120	5.0388
12	.1140 - .0981	.1094	4.5937	.105	4.4090
13	.0980 - .0831	.0938	3.9375	.090	3.7791
14	.0830 - .0721	.0781	3.2812	.075	3.1493
15	.0720 - .0651	.0703	2.9531		
16	.0650 - .0581	.0625	2.625	.0595	2.4894
17	.0580 - .0521	.0563	2.3625		
18	.0520 - .0461	.05	2.10	.048	2.0155
19	.0460 - .0401	.0438	1.8375	.042	1.7636
-	-	.040	1.648		
20	.0400 - .0351	.0375	1.575	.0355	1.4906
-	-	.036	1.512		
-	-	.035	1.470		
21	.0350 - .0321	.0344	1.4438		
22	.0320 - .0291	.0313	1.3125	.029	1.2177
-	-	.030	1.260		
23	.0290 - .0261	.0281	1.1813		
24	.0260 - .0231	.0250	1.05	.0235	.9868
-	-	.024	1.008		
25	.0230 - .0199	.0219	.9188		
-	-	.020	.824		
26	.0198 - .0178	.0188	.7875	.0177	.7432
-	-	.018	.756		
-	-	.0161	.659		
28	.0160 - .0146	.0156	.6562	.0145	.6089
30	.0130 - .0115	.0125	.5250		

*Stainless Steel sheets, 11 gauge and lighter, 48 inches wide and narrower, are regularly produced on continuous rolling mills which are capable of maintaining closer tolerances than hand mills. This has brought about a change in mill ordering practices.

WHEN ORDERING SHEET BY GAUGE NUMBER

Material ordered within the continuous mill range should be expected to be supplied according to the thickness and weight per square foot shown in the table and within the gauge thickness range.

WHEN ORDERING SHEET BY DECIMAL THICKNESS

Material thus ordered should be expected to be supplied with the full thickness tolerances applying as shown on the following page.

NOTE: For a comparison of gauges expressed in decimals of an inch, refer to table in data section.

Weights are theoretical and may vary from actual. See tolerances on next page.

SHEET • PLATE

BAR • WIRE

TUBING • PIPE

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BRAZING PRODUCTS

STAINLESS STEEL

STAINLESS STEEL

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STANDARD TOLERANCES

Stainless Steel Sheets

THICKNESS TOLERANCES

All Finishes — 48 Inches Wide or Narrower

Hand Mill		Continuous Mill	
Ordered Thickness in inches	Tolerance Plus or Minus in inches	Ordered Thickness in inches	Tolerance Plus or Minus in inches
.0581 - .072	.006	.005 - .0059	.001
.0721 - .083	.007	.006 - .029	.0015
.0831 - .098	.008	.0291 - .040	.002
.0981 - .114	.009	.0401 - .072	.003
.1141 - .130	.010	.0721 - .098	.004
.1301 - .145	.012	.0981 - .130	.005
.1451 - .1874	.014	.1301 - .145	.006
		.1451 - .1874	.007

WEIGHT TOLERANCES

The actual weight of any one item of an ordered thickness and size in any finish is limited in overweight by the following tolerances:

- 1 Any item of five sheets or less, or any item estimated to weigh 200 pounds or less, may actually weigh as much as 10% over the theoretical weight.
- 2 Any item of more than five sheets and estimated to weigh more than 200 pounds may actually weigh as much as 7½% over the theoretical weight.

There is no under-tolerance in weight for No. 1 and No. 2 finishes, these finishes being limited in under-tolerance only by the permissible thickness variations. Polished sheets may actually weigh as much as 5% less than the theoretical weight.

For determining estimated weight the following factors are to be used:

Chromium Nickel Stainless Sheets 42.0 lbs. per sq. ft. per inch of thickness.

Straight Chromium Stainless Steel Sheets 41.2 lbs. per sq. ft. per inch of thickness.

WIDTH TOLERANCES

48" and Under $\frac{1}{16}$ " over, nothing under
Over 48" $\frac{1}{8}$ " over, nothing under

LENGTH TOLERANCES

120" and Under $\frac{1}{16}$ " over, nothing under
Over 120" $\frac{1}{8}$ " over, nothing under

STAINLESS STEEL

STANDARD TOLERANCES

Stainless Cold Rolled Strip

THICKNESS TOLERANCES

Thickness tolerance, in., over and under, for thicknesses and widths given

Specified Thickness, Inch	Widths, Inches						
	Under 1 to $\frac{3}{16}$ Incl.	Under 3 to 1 Incl.	3 to 6 Incl.	Over 6 to 9 Incl.	Over 9 to 12 Incl.	Over 12 to 16 Incl.	Over 16 to $23\frac{5}{16}$ Incl.
	.1874 TO .161 INCL.	.002	.003	.004	.004	.004	.005	.006
.160 TO .100 INCL.	.002	.002	.003	.004	.004	.004	.005
.099 TO .0721 INCL.	.002	.002	.003	.003	.003	.004	.004
.072 TO .050 INCL.	.002	.002	.003	.003	.003	.003	.003
.049 TO .0401 INCL.	.002	.002	.0025	.003	.003	.003	.003
.040 TO .035 INCL.	.002	.002	.002	.002	.002	.002	.002
.034 TO .0291 INCL.	.0015	.0015	.002	.002	.002	.002	.002
.029 TO .026 INCL.	.001	.0015	.0015	.0015	.0015	.0015	.0015
.025 TO .020 INCL.	.001	.001	.0015	.0015	.0015	.0015	.0015
.019 TO .013 INCL.	.001	.001	.001	.0015	.0015	.0015	.0015
.012—	.001	.001	.001	.001	.0015	.0015	.0015
.011—	.001	.001	.001	.001	.001	.0015	.0015
.010—	.001	.001	.001	.001	.001	.001	.0015

- NOTE:** (1) For thicknesses under 0.010 to .005 incl. in widths up to and including 16 inches, a permissible variation of plus or minus 10% of the thickness is to apply. For thicknesses under 0.010 to .005 incl. widths over 16 inches to $23\frac{5}{16}$ inches incl., a permissible variation of plus or minus 15% of the thickness is to apply.
- (2) Thickness measurements are taken $\frac{3}{8}$ in. in from edge of the strip, except on widths less than 1 in. the tolerances are applicable for measurements at all locations.

WIDTH TOLERANCES

Number 3 Edge

Width tolerance, in., over and under, for thicknesses and widths given

Specified Thickness, Inch	Widths, Inches					
	Under $\frac{1}{2}$ to $\frac{3}{16}$ Incl.	$\frac{1}{2}$ to 6 Incl.	Over 6 to 9 Incl.	Over 9 to 12 Incl.	Over 12 to 20 Incl.	Over 20 to $23\frac{5}{16}$ Incl.
	.1874 TO .161 INCL.	—	.016	.020	.020	.031	.031
.160 TO .100 INCL.	.010	.010	.016	.016	.020	.020
.099 TO .069 INCL.	.008	.008	.010	.010	.016	.020
.068 AND UNDER	.005	.005	.005	.010	.016	.020

BAR • WIRE

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STAINLESS STEEL

TYPE 301— $\frac{1}{4}$ HARD TEMPER SHEET

Thickness (in inches)	Size (in inches)	Pounds per Sheet
.0625	36 X 96	63.1
	36 X 120	78.8
.050	36 X 120	63.0
.040	36 X 120	50.4
.035	36 X 120	43.3

2B Cold Rolled Finish, Aircraft Quality

Thickness (in inches)	Size (in inches)	Pounds per Sheet
.032	36 X 120	40.3
	36 X 96	31.5
.031	36 X 120	39.4
.025	36 X 120	31.5
.020	36 X 120	27.5
.016	36 X 120	20.2

TYPE 301— $\frac{1}{2}$ HARD TEMPER SHEET

Thickness (in inches)	Size (in inches)	Pounds per Sheet
.0625	36 X 120	78.8
.050	36 X 120	63.0
.040	36 X 120	50.4

2B Cold Rolled Finish, Aircraft Quality

Thickness (in inches)	Size (in inches)	Pounds per Sheet
.036	36 X 120	46.3
.031	36 X 120	39.4
.025	36 X 120	31.5
.020	36 X 120	27.5

TYPE 302-304 SHEET

Thickness (in inches)	Size in inches	Pounds per Sheet
.1406 (10 GA.)	48 X 120	236.2
.120 (11 GA.)	36 X 120	151.1
	48 X 120	201.5
.105 (12 GA.)	36 X 96	105.8
	36 X 120	132.2
	42 X 120	154.3
	48 X 120	176.3
.075 (14 GA.)	30 X 120	78.7
	36 X 96	75.5
	36 X 120	94.4
	42 X 120	110.2
	48 X 120	125.9
	60 X 120 *	164.1
.060 (16 GA.)	30 X 96	49.5
	30 X 120	62.4
	36 X 96	59.7
	36 X 120	74.9
	36 X 144	89.9
	48 X 96	79.9
	48 X 120	99.9
	48 X 144	119.9
.048 (18 GA.)	30 X 96	40.3
	30 X 120	50.3
	36 X 96	48.3
	36 X 120	50.4
	48 X .96	64.4

No. 4 Polish One Side, Annealed

Thickness (in inches)	Size in inches	Pounds per Sheet
.048 (18 GA.)	48 X 120	80.6
.036 (20 GA.)	30 X 96	29.8
	30 X 120	37.2
	36 X 96	35.7
	36 X 120	44.7
	48 X 96	47.6
	48 X 120	59.6
.029 (22 GA.)	30 X 96	24.3
	30 X 120	30.4
	36 X 96	29.2
	36 X 120	36.5
	48 X 96	38.9
	48 X 120	48.7
.024 (24 GA.)	30 X 96	19.7
	30 X 120	24.6
	36 X 96	23.6
	36 X 120	29.6
	48 X 96	31.5
	48 X 120	39.4
.018 (26 GA.)	30 X 96	14.8
	30 X 120	18.5
	36 X 96	17.8
	36 X 120	22.2
	48 X 120	29.7
.015 (28 GA.)	36 X 96	14.6

*Supplied to nominal weight and thickness.

COPPER

STAINLESS STEEL

TYPE 302-304 SHEET

2B Finish — Annealed,
Pickled, and Cold Rolled

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet	
.1406 (10 GA.)	36 X 96	141.7	.060 (16 GA.)	60 X 120*	131.3	
	36 X 120	177.2		60 X 144*	157.5	
	48 X 120	236.2		30 X 96	40.3	
	60 X 120	295.3		30 X 120	50.3	
	60 X 144	354.4		36 X 96	48.3	
	72 X 144	425.2		36 X 120	60.4	
	36 X 96	120.9		48 X 96	64.4	
	36 X 120	151.1		48 X 120	80.6	
	48 X 96	161.2		36 X 120	52.9	
	48 X 120	201.5		36 X 120	50.4	
.120 (11 GA.)	48 X 144	241.8	.042 (19 GA.)	24 X 120	29.8	
	60 X 120*	262.5		30 X 96	29.8	
	60 X 144*	315.0		30 X 120	37.2	
	72 X 144*	378.0		36 X 96	35.7	
	36 X 96	105.8		36 X 120	44.7	
	36 X 120	132.2		48 X 96	47.6	
	48 X 96	141.0		48 X 120	59.6	
	48 X 120	176.3		24 X 96	19.5	
	48 X 144	211.6		30 X 96	24.3	
	60 X 120*	229.7		30 X 120	30.4	
.105 (12 GA.)	60 X 144*	275.6	.036 (20 GA.)	36 X 96	29.2	
	72 X 120*	275.6		36 X 120	36.5	
	72 X 144*	330.8		48 X 96	38.9	
	36 X 96	90.6		48 X 120	48.7	
	36 X 120	113.3		.024 (24 GA.)	24 X 120	19.7
	48 X 120	151.1		30 X 96	19.7	
	24 X 120	63.0		30 X 120	24.6	
	30 X 96	62.9		36 X 96	23.6	
	36 X 96	75.5		36 X 120	29.6	
	36 X 120	94.4		48 X 96	31.5	
.075 (14 GA.)	48 X 96	100.7		48 X 120	39.4	
	48 X 120	125.9	.020	36 X 120	24.8	
	48 X 144	151.1		24 X 96	11.9	
	60 X 120*	164.1		30 X 96	14.8	
	60 X 144*	196.9		30 X 120	18.5	
	72 X 144*	236.3		36 X 96	17.8	
	30 X 96	49.9		36 X 120	22.2	
	30 X 120	62.4		48 X 96	23.7	
	36 X 96	59.7		48 X 120	29.7	
	36 X 120	74.9		36 X 120	20.3	
.060 (16 GA.)	48 X 96	79.9	.0161	36 X 96	14.6	
	48 X 120	99.9		36 X 120	18.2	
	48 X 144	119.9				

*Supplied to nominal weight and thickness.

BAR • WIRE

TUBING • PIPE

HYDRAULIC TUBING
STEEL

SHEET • PLATE

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STAINLESS STEEL

TYPE 302 SHEET

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
.105 (12 GA.)	36 X 120	132.2	.048 (18 GA.)	48 X 120	80.6
	48 X 120	176.3	.0471	36 X 120	59.3
.075 (14 GA.)	36 X 120	94.4	.036 (20 GA.)	36 X 96	35.7
	42 X 120	110.2		36 X 120	37.2
	48 X 96	100.7		48 X 96	47.6
.060 (16 GA.)	48 X 120	125.9		48 X 120	59.6
	36 X 96	59.7	.0351	36 X 120	44.2
	36 X 120	74.9	.029 (22 GA.)	36 X 96	29.2
	48 X 96	79.9		36 X 120	36.5
.048 (18 GA.)	48 X 120	99.9		48 X 120	48.7
	30 X 96	40.3	.024 (24 GA.)	36 X 96	23.6
	30 X 120	50.3		36 X 120	29.6
	36 X 96*	48.3	.018 (26 GA.)	36 X 96	17.8
.036 X 120*	60.4			36 X 120	22.2
	48 X 96	64.4			

*Paper Protected

TYPE 304L (EXTRA LOW CARBON) SHEET

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
.1406 (10 GA.)	48 X 120	236.5	.075 (14 GA.)	48 X 120	125.9
.120 (11 GA.)	48 X 120	201.5	.060 (16 GA.)	48 X 120	99.9
.105 (12 GA.)	36 X 96	105.8	.029 (22 GA.)	36 X 96	29.2
	48 X 120	176.3			

TYPE 316 SHEET

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
.1406 (10 GA.)	36 X 120	177.2	.060 (16 GA.)	36 X 120	74.9
	48 X 120	236.2		48 X 96	79.9
	60 X 144	354.4		48 X 120	99.9
.120 (11 GA.)	36 X 96	120.9		60 X 144*	157.5
	36 X 120	151.1	.048 (18 GA.)	36 X 96	48.3
	48 X 96	161.2		36 X 120	60.4
	48 X 120	201.5		48 X 96	64.4
.105 (12 GA.)	60 X 120*	262.5		48 X 120	80.6
	60 X 144*	315.0	.036 (20 GA.)	36 X 96	35.7
	36 X 120	132.2		36 X 120	44.7
	48 X 120	176.3		48 X 120	59.6
	60 X 120*	229.7	.029 (22 GA.)	36 X 96	29.2
	60 X 144*	275.6		36 X 120	36.5
.090 (13 GA.)	48 X 120	151.1		48 X 120	48.7
	36 X 96	75.5	.024 (24 GA.)	36 X 96	23.6
.075 (14 GA.)	36 X 120	94.4		36 X 120	29.6
	48 X 120	125.9		48 X 120	39.4
	60 X 144*	129.9	.018 (26 GA.)	36 X 96	17.8
	36 X 96	59.7		36 X 120	22.2

* Supplied to nominal weight and thickness.

STAINLESS STEEL

BRASS

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COPPER

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

BAR • WIRE

TUBING • PIPE

HYDRAULIC TUBING
STEEL

STAINLESS STEEL

TYPE 316L (EXTRA LOW CARBON) SHEET

2B Finish — Annealed, Pickled, and Cold Rolled

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
.1406 (10 GA.)	48 X 120	236.2	.075 (14GA.)	48 X 120	125.9
.120 (11 GA.)	48 X 120	201.5	.060 (16GA.)	48 X 120	99.9
.105 (12 GA.)	48 X 120	176.3	.048 (18GA.)	48 X 120	80.6

TYPE 321 TITANIUM STABILIZED SHEET

Aircraft Quality**2D Finish — Annealed, Pickled, and Cold Rolled**

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
.125	36 X 120	157.5	.050	48 X 120	84.0
.090	36 X 120	113.4	.040	36 X 120	50.4
.080	36 X 120	100.8	.036	36 X 120	45.4
	48 X 120	105.8	.032	36 X 120	40.3
.050	36 X 96	50.5	.025	36 X 120	31.5
	36 X 120	63.0	.016	36 X 120	19.8

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STAINLESS STEEL

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PH STAINLESS STEEL SHEET GRADES

17-7 PH and PH 15-7 Mo are readily available in sheet form, and, to a limited extent, 17-4 PH is also available in sheet form. Contact your representative or the warehouse sales office nearest you for additional information.

TYPE 410 (.080 MAXIMUM CARBON) SHEET

Thickness (in inches)	Size (in inches)	Pounds per Sheet	Thickness (in inches)	Size (in inches)	Pounds per Sheet
.156	36 X 120*	192.8	.0781	48 X 120	131.2
.125	36 X 120	157.5	.0625	48 X 96	84.0
.1093	48 X 120	183.7		48 X 120	105.0
.0781	48 X 96	104.9			

*No. 1 Finish, Hot Rolled,
Annealed and Pickled.

TYPE 430 SHEET

Thickness (in inches)	Size (in inches)	Pounds per Sheet	Thickness (in inches)	Size (in inches)	Pounds per Sheet
.060 (16 GA.)	36 X 120	74.9	.029 (22 GA.)	36 X 96	29.2
.036 (20 GA.)	36 X 96	35.7	.024 (24 GA.)	36 X 96	23.6

A-286* SHEET

Thickness (in inches)	Size in inches	Pounds per Sheet	Thickness (in inches)	Size in inches	Pounds per Sheet
.125	24 X 96	84.15	.060	24 X 96	39.95
.109	24 X 96	72.35	.050	24 X 96	33.65
.090	24 X 96	60.45		36 X 96	50.50
	36 X 96	90.60	.040	24 X 96	28.20
.080	24 X 96	52.75	.030	24 X 96	19.45
.070	24 X 96	47.30			

*Allegheny-Ludlum Grade Designation

STAINLESS STEEL

**COILS
BANDING STRIP
RIGIDIZED SHEET
PERFORATED SHEET
EXPANDED SHEET**

Stainless steels are available in these commercial forms. Call or write for information.

STAINLESS STEEL PLATES — STANDARD TOLERANCES

Thickness Tolerances for Rectangular Stainless Steel Plates

Plates must be ordered to thickness, not to weight per square foot. For purposes of production and shipment of plates within production size ranges, the thickness tolerances shown apply.

Specified Thickness (inches)	Thickness Tolerance — Over Variation*	
	Widths to 84 incl.	Widths over 84 to 120 incl.
.3/16 TO .3/8 EXCL.	.046	.050
.3/8 TO .3/4 EXCL.	.054	.058
.3/4 TO 1 EXCL.	.060	.064
1 TO 2 INCL.	.070	.074
OVER 2	INQUIRE	INQUIRE

*Spot grinding is permitted to remove surface imperfections. No plate, however, shall vary more than .01" under specified thickness.

BILLING WEIGHTS

Stainless Steel Plates

Decimal Thickness	Fraction of an inch	Pounds per Square Foot		
		Widths up to and incl. 84"	Widths over 84" to 96" incl.	Widths over 96"
.1875	3/16	7.985	8.295	8.566
.21875	7/32	9.315	9.677	9.994
.250	1/4	10.646	10.956	11.266
.3125	5/16	13.308	13.437	13.695
.375	3/8	15.968	16.123	16.433
.4375	7/16	18.630	18.810	19.172
.500	1/2	21.291	21.498	21.911
.5625	9/16	23.952	24.185	24.650
.625	5/8	26.614	26.614	27.002
.6875	11/16	29.276	29.276	29.702
.750	3/4	31.937	31.937	32.402
.8125	13/16	34.599	34.599	35.103
.875	7/8	37.260	37.260	37.803
.9375	15/16	39.922	39.922	40.503
1.000	1	42.582	42.582	43.202
1.250	1 1/4	53.228	53.228	54.004
1.500	1 1/2	63.873	63.873	64.804
1.750	1 3/4	74.519	74.519	75.605
2.000	2	85.164	85.164	86.405

Billing weights for thicknesses other than those shown will be furnished upon inquiry.

BAR • WIRE

TUBING • PIPE

HYDRAULIC TUBING
STEEL

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SHEET • PLATE ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY DATA • WELDING BRAZING PRODUCTS

STAINLESS STEEL

STAINLESS STEEL

STAINLESS STEEL PLATES

Alloys and Gauges Normally Carried in Stock
indicated by "X"

Thickness (in inches)	TYPE 304	TYPE 304 ELC	TYPE 316	TYPE 316 ELC
3/16	X	X	X	X
1/4	X	X	X	X
5/16	X			
3/8	X	X	X	X
1/2	X		X	
3/4	X		X	
1			X	

All plates above are hot rolled, annealed and pickled, No. 1 Finish.

STANDARD SIZES — BILLING WEIGHTS

Weight in Pounds Per Plate

Size (in inches)	Thickness of Plate in Inches						
	3/16	1/4	5/16	3/8	1/2	3/4	1
36 X 96	191.64	255.50	319.39	383.23	510.98	766.49	1021.97
36 X 120	239.55	319.38	399.24	479.04	638.73	958.11	1277.46
48 X 96	255.52	340.67	425.86	510.98	681.31	1021.98	1362.62
48 X 120	319.40	425.84	532.32	638.72	851.64	1277.48	1703.28
48 X 240	638.80	851.68	1064.64	1277.44	1703.28	2554.96	3406.56
60 X 120	399.25	532.30	665.40	798.40	1064.55	1596.85	2129.10
60 X 144	479.10	638.76	798.48	958.08	1277.46	1916.22	2554.92
60 X 240	798.50	1064.60	1330.80	1596.80	2129.10	3193.70	4258.20
72 X 120	479.10	638.76	798.48	958.08	1277.46	1916.22	2554.92
72 X 240	958.20	1277.52	1596.96	1916.16	2554.92	3832.44	5109.84
84 X 120	558.95	745.22	931.56	1117.76	1490.37	2235.59	2980.74
84 X 144	670.74	894.26	1117.87	1341.31	1788.44	2682.71	3576.89
96 X 120	663.60	876.48	1074.96	1289.84	1719.84	2554.96	3406.56
96 X 240	1327.20	1752.96	2149.92	2579.68	3439.68	5109.92	6813.12

CLAD PLATES

For plate sizes of Stainless Clad Steel, see Industrial Products section.

COPPER

STAINLESS STEEL

SECTION TOLERANCES STAINLESS STEEL BAR AND WIRE

Cold Finished Bar and Wire

Size Inches	Rounds C.D. or C.G.		Squares Cold Drawn	
	Plus	Minus	Plus	Minus
4 ⁹ / ₁₆ TO 5.....	.008"	.008"	—	—
4 ¹ / ₈ TO 4 ¹ / ₂.....	.005"	.005"	—	—
3 ¹ / ₈ TO 4.....	.003"	.003"	.003"	.003"
2 ¹³ / ₁₆ TO 3.....	.003"	.003"	.003"	.003"
1 ¹ / ₂ TO 2 ³ / ₄.....	.003"	.003"	.003"	.003"
1 TO 1 ¹⁵ / ₃₂.....	.0025"	.0025"	.0025"	.0025"
5/8 TO 3 ¹ / ₃₂.....	.002"	.002"	.002"	.002"
1/2 TO 1 ¹⁵ / ₃₂.....	.002"	.002"	.002"	.002"
3/8 TO 1 ¹¹ / ₃₂.....	.0015"	.0015"	.0015"	.0015"
5/16 TO 1 ¹¹ / ₃₂.....	.0015"	.0015"	.0015"	.0015"
.044 TO 1/4.....	.001"	.001"	.001"	.001"

If required, centerless ground bars can be furnished to tolerances closer than standard.

Cold Finished Hexagons

Size Inches	Plus	Minus
OVER 3.....	0	.010"
OVER 2 TO 3.....	0	.008"
OVER 1 TO 2.....	0	.006"
OVER 1/2 TO 1.....	0	.004"
1/2.....	0	.004"
5/16 TO UNDER 1/2.....	0	.003"
.044 TO UNDER 5/16.....	0	.002"

Hot Finished Bars

Size (in inches)	Rounds		Squares	
	Plus	Minus	Plus	Minus
OVER 4 ¹ / ₂ TO 5 ¹ / ₂.....	.078"	0	.078"	0
OVER 3 ¹ / ₂ TO 4 ¹ / ₂.....	.063"	0	.063"	0
OVER 2 ¹ / ₂ TO 3 ¹ / ₂.....	.047"	0	.047"	0
OVER 2 TO 2 ¹ / ₂.....	.032"	0	.032"	0
OVER 1 ¹ / ₂ TO 2.....	.016"	.016"	.016"	.016"
OVER 1 ³ / ₈ TO 1 ¹ / ₂.....	.014"	.014"	.014"	.014"
OVER 1 ¹ / ₄ TO 1 ³ / ₈.....	.012"	.012"	.012"	.012"
OVER 1 ¹ / ₈ TO 1 ¹ / ₄.....	.011"	.011"	.011"	.011"
OVER 1 TO 1 ¹ / ₈.....	.010"	.010"	.010"	.010"
OVER 7/8 TO 1.....	.009"	.009"	.009"	.009"
OVER 5/8 TO 7/8.....	.008"	.008"	.008"	.008"
OVER 7/16 TO 5/8.....	.007"	.007"	.007"	.007"
OVER 5/16 TO 7/16.....	.006"	.006"	.006"	.006"
1/4 TO 5/16 INCL.....	.005"	.005"	.005"	.005"

Continued on next page

BAR • WIRE TUBING • PIPE

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STEEL

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MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

STAINLESS STEEL

SECTION TOLERANCES STAINLESS STEEL BAR AND WIRE (Continued)

Flats and Squares

Size (in inches)	Width		Thickness		
	Over	Under	1/8" to 1/2" Incl. Plus or Minus	Over 1/2" to 1" Incl. Plus or Minus	Over 1" to 2" Incl. Plus or Minus
OVER 4 TO 6.... .094	.063"	.015"	.020"	.031"	
OVER 2 TO 4.... .063	.031"	.015"	.020"	.031"	
OVER 1 TO 2.... .031	.031"	.012"	.015"	.031"	
1 INCLUSIVE.... .016	.016"	.008"	.010"	....



TYPE 303 ROUND BAR

12 Foot Random Lengths

Free Machining

Annealed

Cold Drawn—Sizes thru
1/2" dia.

Centerless Ground—1/2" thru
4" dia.

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/16	.010	23/32	1.500	1 7/8	9.39
3/32	.023	3/4	1.50	2	10.68
1/8	.042	13/16	1.76	2 1/8	12.06
5/32	.065	7/8	2.04	2 1/4	13.52
11/64	.079	15/16	2.35	2 5/8	15.06
3/16	.094	1	2.67	2 1/2	16.69
7/32	.128	1 1/16	3.02	2 5/8	18.40
1/4	.167	1 1/8	3.38	2 3/4	20.20
9/32	.211	1 3/16	3.77	2 7/8	22.07
5/16	.261	1 1/4	4.17	3	24.03
11/32	.316	1 5/16	4.60	3 1/8	26.08
3/8	.376		5.05	3 1/4	28.21
13/32	.441	1/2	5.52	3 1/2	32.71
7/16	.511	1 1/2	6.01	3 3/4	37.55
15/32	.660	1 9/16	6.52	4	42.73
1/2	.668	1 5/8	7.05	4 1/2 *	54.07
9/16	.345	1 11/16	7.60	5 *	66.76
5/8	1.04	1 3/4	8.18	6 *	96.11
11/16	1.26				

* Annealed and Smooth turned

STAINLESS STEEL

INDUSTRIAL PRODUCTS

SHEET • PLATE ROD • SHAPES • WIRE

TYPE 304 ROUND BAR

12 Foot Random Lengths

Annealed

Cold Drawn—Sizes thru
1/2" dia.

Centerless Ground—1/2" dia.
and larger

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
3/32	.023	7/8	2.04	1 15/16	10.02
1/8	.042	1	2.67	2	10.68
5/32	.065	1 1/16	3.01	2 1/8	12.06
3/16	.094	1 1/8	3.38	2 3/16	12.78
1/4	.167	1 3/16	3.77	2 1/4	13.52
5/16	.261	1 1/4	4.17	2 3/8	15.06
3/8	.376	1 5/16	4.60	2 1/2	16.69
7/16	.511	1 3/8	5.05	2 3/4	20.20
1/2	.668	1 7/16	5.52	3	24.03
9/16	.845	1 1/2	6.01	3 1/4	28.21
5/8	1.04	1 5/8	7.05	3 1/2	32.71
11/16	1.26	1 3/4	8.18	3 3/4	37.72
3/4	1.50	1 7/8	9.39	4	42.73

TYPE 304 ROUND BAR

Forging Quality Ground Finish

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
15/16	2.347	1 1/2	6.000
1 11/64	3.500	1 5/8	7.050
1 3/16	3.770	1 7/8	9.390
1 5/16	4.600	2 1/8	22.114
1 7/16	5.520		

MONEL-NICKEL

TUBING • PIPE

HYDRAULIC TUBING

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FOUNDRY DATA
WELDING
BRAZING PRODUCTS

STAINLESS STEEL



12 Foot Random Lengths

Annealed

**Cold Drawn—Sizes thru
½" dia.**

**Centerless Ground—½" thru
4" dia.**

TYPE 316 ROUND BAR

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/8	.042	7/8	2.04	1 3/4	8.18
3/16	.094	1	2.67	1 7/8	9.39
1/4	.167	1 1/16	3.02	2	10.68
5/16	.261	1 1/8	3.38	2 1/4	13.52
3/8	.376	1 3/16	3.77	2 1/2	16.69
7/16	.511	1 1/4	4.17	2 3/4	20.20
1/2	.668	1 5/16	4.60	3	24.03
9/16	.845	1 3/8	5.05	3 1/8	26.08
5/8	1.04	1 1/2	6.01	3 1/4	28.21
11/16	1.26	1 9/16	6.52	4	42.73
3/4	1.50	1 5/8	7.05	4 1/4 *	48.23

* Annealed and
Smooth turned

TYPE 316 ROUND BAR

**Forging Quality
Ground Finish**

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
15/16	2.347	1 7/16	5.520
1 1/16	3.014	1 1/2	6.000
1 11/64	3.500	1 5/8	7.050
1 3/16	3.770	1 7/8	9.390

STAINLESS STEEL

BRASS

COPPER

STAINLESS STEEL

TYPE 316 ROUND BAR AND WIRE

Rockwell 90, Annealed thru $\frac{3}{8}$ " dia.—Cold Finished
Larger than $\frac{3}{8}$ " dia.—Centerless Ground

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.042	$\frac{3}{4}$	1.502
$\frac{3}{16}$	.094	$\frac{7}{8}$	2.044
$\frac{1}{4}$	.167	$1\frac{5}{8}$	7.051
$\frac{5}{16}$	.261	$1\frac{7}{8}$	9.388
$\frac{3}{8}$	.376	$1\frac{15}{16}$	10.020
$\frac{9}{16}$	.845	$2\frac{3}{16}$	12.780

TYPE 321 ROUND BAR AND WIRE

Cold Finished

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.668	$\frac{7}{8}$	2.044	$1\frac{5}{8}$	7.051
$\frac{9}{16}$	.845	1	2.670	$1\frac{3}{4}$	8.178
$\frac{5}{8}$	1.043	$1\frac{1}{8}$	3.379	$2\frac{3}{8}$	15.062
$\frac{3}{4}$	1.502	$1\frac{1}{4}$	4.173	$3\frac{1}{2}$	32.71
$1\frac{3}{16}$	1.763	$1\frac{1}{2}$	6.008		

TYPE 347 ROUND BAR AND WIRE

Cold Finished

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{3}{8}$	.376	$1\frac{3}{16}$	1.763	$1\frac{5}{8}$	7.051
$\frac{7}{16}$	.511	$\frac{7}{8}$	2.044	$1\frac{3}{4}$	8.178
$\frac{1}{2}$	.668	$1\frac{15}{16}$	2.347	$1\frac{13}{16}$	8.773
$\frac{9}{16}$	.845	1	2.670	2	10.681
$\frac{5}{8}$	1.043	$1\frac{1}{4}$	4.173	$2\frac{1}{4}$	13.519
$1\frac{1}{16}$	1.262	$1\frac{7}{16}$	5.518	$2\frac{3}{8}$	15.062
$\frac{3}{4}$	1.502	$1\frac{1}{2}$	6.008	3	24.033

SHEET • PLATE

ROD • SHAPES • WIRE

MONEL-NICKEL

FOUNDRY • BRAZING • WELDING

TUBING • PIPE

HYDRAULIC TUBING

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STAINLESS STEEL

STAINLESS STEEL



12 Foot Random Lengths

Free Machining, Annealed

Cold Drawn—Sizes thru
1/2" dia.

Centerless Ground—1/2"
thru 4" dia.

TYPE 416 ROUND BAR

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/8	.042	1	2.67	2 1/4	13.52
3/16	.094	1 1/16	3.01	2 5/16	14.28
1/4	.167	1 1/8	3.38	2 3/8	15.06
5/16	.261	1 3/16	3.77	2 1/2	16.69
3/8	.376	1 1/4	4.17	2 5/8	18.40
7/16	.511	1 3/8	5.05	2 3/4	20.20
1/2	.668	1 1/2	6.01	3	24.03
9/16	.845	1 5/8	7.05	3 1/4	28.21
5/8	1.04	1 3/4	8.18	3 3/8	30.42
11/16	1.26	1 7/8	9.39	3 1/2	32.71
3/4	1.50	1 15/16	10.02	3 3/4	37.55
13/16	1.76	2	10.68	4 1/4*	48.23
7/8	2.04	2 1/8	12.06	4 1/2*	54.07
15/16	2.35			*	Annealed and Smooth turned

TYPE 430 AND 430F ROUND BAR

Centerless Ground
12 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot
5/8	1.043

17-4 PH* ROUND BAR

Annealed and Centerless
Ground, 29 to 35 on Rockwell C
Scale, 12 to 14 Foot Random
Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/4	.167	2	10.68
3/8	.376	2 1/16	11.36
1/2	.668	2 1/8	12.06
9/16	.845	2 1/4	13.52
5/8	1.04	2 3/8	15.06
3/4	1.50	2 1/2	16.69
7/8	2.04	2 5/8	18.40
1	2.67	2 3/4	20.20
1 1/8	3.38	2 7/8	22.07
1 1/4	4.17	3	24.03
1 3/8	5.05	3 1/8	26.08
1 1/2	6.01	3 1/4	28.21
1 5/8	7.05	3 1/2	32.71
1 3/4	8.18	4	42.73
1 7/8	9.39		

*17-10 P bars also available

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TYPE 303 HEXAGONAL BAR

**12 Foot Random Lengths
Free Machining
Cold Drawn, Annealed,
and Pickled**

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{16}$	.104	$\frac{5}{8}$	1.15	$1\frac{1}{16}$	3.73
$\frac{1}{4}$	.184	$1\frac{1}{16}$	1.39	$1\frac{1}{4}$	4.60
$\frac{5}{16}$	.288	$\frac{3}{4}$	1.66	$1\frac{5}{16}$	5.07
$1\frac{1}{32}$	.348	$1\frac{3}{16}$	1.94	$1\frac{1}{2}$	6.63
$\frac{3}{8}$	.414	$\frac{7}{8}$	2.25	$1\frac{5}{8}$	7.77
$\frac{7}{16}$	.564	$1\frac{5}{16}$	2.59	$1\frac{3}{4}$	9.02
$\frac{1}{2}$	.736	1	2.94	$1\frac{13}{16}$	9.67
$1\frac{1}{16}$	.932	$1\frac{1}{16}$	3.32	2	11.78

TYPE 304 HEXAGONAL BAR

Cold Drawn, Annealed

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.736	$1\frac{1}{16}$	3.324
$\frac{5}{8}$	1.150	$1\frac{1}{8}$	3.726
$\frac{3}{4}$	1.656	$1\frac{1}{4}$	4.601
$1\frac{1}{16}$	1.944	$1\frac{3}{8}$	5.567
$\frac{7}{8}$	2.254	$1\frac{3}{4}$	9.017

TYPE 316 HEXAGONAL BAR

Cold Drawn, Annealed

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.736	$1\frac{1}{16}$	3.324
$\frac{9}{16}$	.932	$1\frac{1}{8}$	3.726
$\frac{5}{8}$	1.150	$1\frac{3}{8}$	5.567
$\frac{3}{4}$	1.656	$1\frac{1}{4}$	4.601
$1\frac{1}{16}$	1.944	$1\frac{1}{2}$	6.626
$\frac{7}{8}$	2.254	$1\frac{5}{8}$	7.774
1	2.944	$1\frac{3}{4}$	9.017

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STAINLESS STEEL

TYPE 321 HEXAGONAL BAR

Cold Finished

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.736	$1\frac{1}{6}$	3.727
$1\frac{3}{16}$	1.944	$1\frac{1}{4}$	4.601
$\frac{7}{8}$	2.254		

TYPE 347 HEXAGONAL BAR

Cold Finished

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{5}{8}$	1.150	$1\frac{1}{16}$	3.324
$1\frac{1}{16}$	1.392	$1\frac{1}{4}$	4.601
$\frac{3}{4}$	1.656	$1\frac{3}{8}$	5.567
$1\frac{3}{16}$	1.944	$1\frac{1}{2}$	6.625
$\frac{7}{8}$	2.254		



TYPE 416 HEXAGONAL BAR

12 Foot Random Lengths

Free Machining

Cold Drawn, Annealed,
and Pickled

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.184	$\frac{3}{4}$	1.66	$1\frac{1}{4}$	4.60
$\frac{3}{8}$	.414	$\frac{7}{8}$	2.25	$1\frac{1}{2}$	6.63
$1\frac{7}{16}$	.564	1	2.94	$1\frac{5}{8}$	7.78
$\frac{1}{2}$	.736	$1\frac{1}{8}$	3.73	$1\frac{3}{4}$	9.02
$\frac{5}{8}$	1.15				



17-4 PH HEXAGONAL BAR

12 Foot Random Lengths

Cold Drawn, Annealed and
Pickled

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{4}$	1.66	$\frac{7}{8}$	2.25	$1\frac{3}{16}$	4.152
$\frac{5}{8}$	1.15				



STAINLESS STEEL



TYPE 303 SQUARE BAR

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.053	$\frac{7}{16}$	.651	$\frac{7}{8}$	2.60
$\frac{3}{16}$	.120	$\frac{1}{2}$	.850	1	3.40
$\frac{1}{4}$	.213	$\frac{5}{8}$	1.33	$\frac{1}{4}$	5.31
$\frac{5}{16}$	.332	$\frac{3}{4}$	1.91	$\frac{1}{2}$	7.65
$\frac{3}{8}$	.478	$\frac{13}{16}$	2.25	2	13.60

TYPE 304 AND 316 SQUARE BAR

Cold Drawn, Annealed
and Pickled

Size (in inches)	Pounds per Lineal Foot
1	3.400
$1\frac{1}{4}$	5.313

TYPE 416 SQUARE BAR

12 Foot Random Lengths
Free Machining
Cold Drawn, Annealed,
and Pickled

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$.213	$\frac{7}{16}$.651	$\frac{3}{4}$	1.91
$\frac{5}{16}$.332	$\frac{1}{2}$.850	1	3.40
$\frac{3}{8}$.478	$\frac{5}{8}$	1.33		

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TYPE 302-304 RECTANGULAR BAR

12 Foot Random Lengths
Hot Rolled, Annealed,
and Pickled

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{1}{2}$ †	.213	$\frac{1}{4} \times \frac{3}{4}$	.638	$\frac{1}{2} \times 2$	3.40
$\frac{5}{16}$ †	.266	1	.850	$2\frac{1}{2}$	4.25
$\frac{3}{8}$	.319	$1\frac{1}{4}$	1.06	3	5.10
1	.425	$1\frac{1}{2}$	1.28	4	6.80
$1\frac{1}{4}$	.531	2	1.70	$\frac{5}{8} \times 1$	2.13
$1\frac{1}{2}$	.638	$2\frac{1}{2}$	2.125	$1\frac{1}{2}$	3.19
2	.850	3	2.55	$\frac{3}{4} \times 1$	2.55
3	1.275	4	3.40	$1\frac{1}{2}$	3.83
$\frac{3}{16} \times \frac{1}{2}$ †	.319	$\frac{3}{8} \times \frac{3}{4}$	.956	2	5.10
$\frac{3}{4}$	.478	1	1.28	3	7.65
$\frac{7}{8}$	.558	$1\frac{1}{4}$ *	1.50	4	10.20
1	.638	$1\frac{1}{2}$ *	1.92	6	15.30
$1\frac{1}{4}$	.797	2	2.55	$1 \times 1\frac{1}{4}$	3.40
$1\frac{1}{2}$	.956	$2\frac{1}{2}$	3.188	$1\frac{1}{2}$	5.10
$1\frac{3}{4}$	1.116	3	3.825	2	6.80
2	1.28	4	5.100	3	10.20
$2\frac{1}{2}$	1.594	$\frac{1}{2} \times \frac{3}{4}$	1.275	4	13.60
3	1.913	1	1.70	6	20.40
$\frac{1}{4} \times \frac{1}{2}$	.425	$1\frac{1}{4}$	2.125	10	34.00
$\frac{5}{8}$	.531	$1\frac{1}{2}$	2.55	$1\frac{1}{2} \times 1\frac{3}{4}$	8.928

*Also stocked in Type 302 cold drawn, annealed and pickled.

†Also stocked in Type 302 cold drawn, annealed and pickled. #4 Round Edge.

TYPE 316 RECTANGULAR BAR

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times 1$	.425	$\frac{1}{4} \times 2$	1.700	$\frac{3}{8} \times 2$	2.550
$\frac{1}{4} \times \frac{1}{2}$.425	$2\frac{1}{2}$	2.125	$2\frac{1}{2}$	3.188
1	.850	3	2.550	3	3.825
$1\frac{1}{2}$	1.275	$\frac{3}{8} \times 1$	1.275	$\frac{1}{2} \times 1$	1.700
$1\frac{3}{4}$	1.488	$1\frac{1}{2}$	1.913	2	3.400

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STAINLESS STEEL

TYPE 410
RECTANGULAR BAR12 Foot Random Lengths
Hot Rolled, Annealed,
and Pickled

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{3}{4}$	.319	$\frac{1}{2} \times \frac{3}{4}$	1.28
$\frac{1}{4} \times 1\frac{3}{4}$	1.49	$\frac{7}{8}$	1.49
$3\frac{1}{2}$	2.98	1	1.70

SQUARE BILLETS

304 and 304 ELC
316 and 316 ELC

Round Corners

Forging Quality

9 to 14 Foot Random Length

Size (in inches)	Pounds per Lineal Foot
4 × 4	54.0
6 × 6	122.0
8 × 8	217.0



TYPE 302-304 ANGLES

Hot Rolled, Annealed,
and Pickled

20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{3}{4} \times \frac{3}{4} \times \frac{1}{8}$	.59	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$	2.34
$1 \times 1 \times \frac{1}{8}$	.80	$2 \times 2 \times \frac{1}{8}$	1.65
$1 \times 1 \times \frac{3}{16}$	1.16	$2 \times 2 \times \frac{3}{16}$	2.44
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	1.01	$2 \times 2 \times \frac{1}{4}$	3.19
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{3}{16}$	1.48	$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{3}{16}$	3.07
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$	1.23	$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$	4.10
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	1.80	$3 \times 3 \times \frac{1}{4}$	4.90



TYPE 316 ANGLES

Hot Rolled, Annealed,
and Pickled

20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$1 \times 1 \times \frac{1}{8}$	.80	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$	2.34
$1 \times 1 \times \frac{3}{16}$	1.16	$2 \times 2 \times \frac{3}{16}$	2.44
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$	1.23	$2 \times 2 \times \frac{1}{4}$	3.19
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	1.80	$3 \times 3 \times \frac{1}{4}$	4.47

STAINLESS STEEL

STAINLESS STEEL

TYPE 302 METALLIZING WIRE, ROUND*

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.041675	$\frac{3}{16}$	.09327

*Also available in other alloys

17-7 PH SPRING TEMPER WIRE

Condition C

Diameter (in inches)	Pounds per Lineal Foot
$\frac{3}{16}$	.09327

TYPE 302 AND 304 ANNEALED WIRE

Random Coils

Diameter (in inches)	Pounds per Lineal Foot
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.025 *	.001667
.032 *	.002731
.040 *	.004268
.051 *	.006937
.062	.010253
.064 *	.010925
.072	.018327
.250 †	.1667

* Stocked in 5 lb. non-returnable spools

† Also stocked in Type 316

TYPE 305 SAFETY WIRE

5# spools

Diameter (in inches)	Pounds per Lineal Foot
.024	.001550
.031	.002584
.043	.004998

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TYPE 304 WIRE CLOTH

Mesh	Diameter of wire in inches	Width and Length	Pounds per Square Foot	Mesh	Diameter of wire in inches	Width and Length	Pounds per Square Foot
150	.0026	24" X 224'	.0714	12	.023	36" X 100'	.422
120	.0037	36" X 100'	.116	10	.025	36" X 100'	.412
100	.0045	36" X 100'	.142	8	.020	24" X 30'	.186
		29 $\frac{1}{2}$ " X 25'	.142		.028	36" X 100'	.411
60	.0075	36" X 100'	.237		.032	29" X 25'	.541
50	.009	36" X 100'	.32		.035	36" X 100'	.651
		42" X 100'	.32	4	.047	36" X 100'	.572
30	.011	36" X 100'	.245		.063	48" X 100'	1.048
40	.013	24" X 100'	.488	3	.027	36" X 100'	.428
20	.016	36" X 100'	.344	2	.063	36" X 100'	.512
		29" X 25'	.344		.080	36" X 100'	.83
16	.020	36" X 100'	.43			48" X 100'	.83
	.018	36" X 100'	.345				

TYPE 304 MECHANICAL NEEDLE TUBING

Cold Drawn and
Annealed

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
.065	.047	.009	.52

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STAINLESS STEEL

STAINLESS STEEL

TYPE 304 TUBING — SEAMLESS

Cold Drawn, Annealed,
and Pickled
20 Foot Random Lengths

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{3}{16}$	.143	.022	.037
	.123	.032	.055
	.117	.035	.057
	.194	.028	.066
	.180	.035	.080
	.152	.049	.105
$\frac{5}{16}$	.120 *	.065	.128
	.257	.028	.085
	.243	.035	.104
	.215	.049	.138
$\frac{3}{8}$	.182	.065	.172
	.305	.035	.127
	.277	.049	.171
	.245 *	.065	.215
$\frac{1}{2}$	.430 *	.035	.174
	.402 *	.049	.236
	.370 *	.065	.302
	.555	.035	.220
$\frac{5}{8}$	.527	.049	.301
	.495	.065	.389
	.680	.035	.267
	.652	.049	.367
$\frac{7}{8}$	.620	.065	.475
	.745	.065	.562
	1	.065	.649
		.083	.813
$1\frac{1}{2}$	1.232	.134	1.96
$1\frac{3}{4}$	1.652	.049	.890
	1.620	.065	1.17
2	1.870	.065	1.34

*Also stocked in Type 316

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STAINLESS STEEL

TYPE 304 TUBING — WELDED

Full Finish, Annealed,
and Pickled
20 Foot Random Lengths

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.055	.035	.034
$\frac{3}{16}$	.118	.035	.057
$\frac{1}{4}$	.180 *	.035	.080
	.170	.040	.090
	.152	.049	.105
	.120 *	.065	.128
$\frac{5}{16}$	.243	.035	.104
	.215	.049	.138
	.183	.065	.172
$\frac{3}{8}$	.305 *	.035	.127
	.277 *	.049	.171
	.245	.065	.215
$\frac{7}{16}$	.367	.035	.151
	.340	.049	.204
$\frac{1}{2}$	.430 *	.035	.174
	.402 *	.049	.236
	.370 *	.065	.302
$\frac{9}{16}$	.493	.035	.197
$\frac{5}{8}$	.555	.035	.220
	.527 *	.049	.301
	.495	.065	.389
$\frac{3}{4}$	.680	.035	.267
	.652 *	.049	.367
	.620 *	.065	.475
	.584	.083	.591
$\frac{7}{8}$	.805	.035	.314
	.777	.049	.432
1	.930	.035	.361
	.902	.049	.498
	.870 *	.065	.649
	.834	.083	.813
	.760	.120	1.288
$1\frac{1}{8}$	.760	.035	.407
	1.055 †	.065	.736

* Stocked also in TYPE 316

Continued on next page

† Stocked also in TYPE 304
with #4 polish on O.D.

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TYPE 304 TUBING — WELDED (Continued)

Full Finish, Annealed,
and Pickled

20 Foot Random Lengths

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
1 $\frac{1}{4}$	1.180 †	.035	.454
	1.152	.049	.628
	1.120 *	.065	.823
	1.010	.120	1.448
1 $\frac{3}{8}$	1.245	.065	.909
1 $\frac{1}{2}$	1.430	.035	.548
	1.402	.049	.759
	1.370 *	.065	.996
	1.334	.083	1.26
	1.260	.120	1.77
1 $\frac{5}{8}$	1.495	.065	1.08
1 $\frac{3}{4}$	1.680	.035	.641
	1.652	.049	.890
	1.620	.065	1.17
1 $\frac{7}{8}$	1.745	.065	1.26
2	1.930	.035	.734
	1.902	.049	1.02
	1.870 * †	.065	1.34
	1.834	.083	1.70
	1.760	.120	2.41
	1.625	.188	3.64
2 $\frac{1}{4}$	2.152	.049	1.15
	2.120	.065	1.52
2 $\frac{1}{2}$	2.370	.065	1.69
	2.260	.120	3.05
3	2.870	.065	2.04
	2.834	.083	2.59
	2.760	.120	3.69
3 $\frac{1}{4}$	3.187	.031	1.07
4	3.834 *	.083	3.47
4 $\frac{1}{4}$	4.176	.037	1.67
6 $\frac{1}{4}$	6.162	.044	2.92
8 $\frac{1}{4}$	8.162	.044	3.86

* Stocked also in TYPE 316

† Stocked also in TYPE 304
with #4 polish on O.D.

STAINLESS STEEL

TYPE 304 BEVERAGE TUBING

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.210	.020	.049
$\frac{5}{16}$	.272	.020	.063
$\frac{3}{8}$	.335	.020	.093

TYPE 321 TUBING—WELDED

Full Finished, Annealed
and Pickled
20 Foot Random Lengths

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{3}{16}$	.117 *	.035	.034
$\frac{1}{4}$	.210	.020	.049
	.194	.028	.066
	.180 *	.035	.080
$\frac{5}{16}$	.208	.020	.063
	.242 *	.035	.104
$\frac{3}{8}$	.335	.020	.093
	.305 *	.035	.127
$\frac{7}{16}$	.367 †	.035	.151
$\frac{1}{2}$	.460	.020	.103
	.444	.028	.141
	.430 *	.035	.174
$\frac{5}{8}$	.555 †	.035	.220
$\frac{3}{4}$	.680 *	.035	.267
1	.944	.028	.291
	.930 *	.035	.361
$1\frac{1}{4}$	1.180 †	.035	.454

* Also stocked in Seamless, Cold Drawn,
Annealed and Pickled

† Stocked in Seamless only.

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STAINLESS STEEL

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TYPE 347 TUBING—WELDED

Full Finished, Annealed
and Pickled
20 Foot Random Lengths

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.210	.020	.049
$\frac{5}{16}$	.242	.035	.104
$\frac{3}{8}$	.335	.020	.093
	.319	.028	.104
$\frac{1}{2}$	.430	.035	.174
$\frac{3}{4}$	.694	.028	.216
	.680	.035	.267

TYPE 446 TUBING—SEAMLESS

Cold Drawn, Annealed
and Pickled
20 Foot Random Lengths

O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{5}{16}$	.188	.063	.168

PRESSURE TUBING

Welded and seamless pressure tubing in all standard grades of Stainless Steel, for use in condenser, heat exchanger, boiler, and still tube applications, are available at mill prices and mill delivery. This tubing is produced to meet ASTM specifications, or other applicable industry specifications.

For additional information, call your nearest warehouse sales office.

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SEAMLESS PIPE

TYPES 304 and 304L
TYPES 316 and 316L

Schedule 10

**Cold Drawn, Annealed
and Pickled**

20 Foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
1/8	.405	.307	.049	.1863
1/4	.540	.410	.065	.3297
3/8	.675	.545	.065	.4235
1/2	.840	.674	.083	.6710
5/8	1.050	.884	.083	.857
1	1.315	1.097	.109	1.404
1 1/4	1.660	1.442	.109	1.806
1 1/2	1.90	1.682	.109	2.085
2	2.375	2.157	.109	2.638
2 1/2	2.875	2.635	.120	3.531
3	3.500	3.26	.120	4.332
3 1/2	4.00	3.76	.120	4.973
4	4.50	4.26	.120	5.613

SEAMLESS PIPE

TYPES 304 and 304L
TYPES 316 and 316L

Standard Weight, Schedule 40

**Cold Drawn, Annealed,
and Pickled**

20 Foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
1/8	.405	.269	.068	.245
1/4	.540	.364	.088	.425
3/8	.675	.493	.091	.568
1/2	.840	.622	.109	.851
5/8	1.05	.824	.113	1.13
1	1.315	1.049	.133	1.68
1 1/4	1.66	1.38	.140	2.27
1 1/2	1.90	1.61	.145	2.72
2	2.375	2.067	.154	3.65
2 1/2	2.875	2.469	.203	5.79
3	3.50	3.068	.216	7.58
3 1/2	4.00	3.548	.226	9.11
4	4.50	4.026	.237	10.79
5	5.563	5.047	.258	14.62
6	6.625	6.065	.280	18.97
8	8.625	7.981	.322	28.55

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STAINLESS STEEL

SEAMLESS PIPE
TYPES 304 and 304L
TYPES 316 and 316L

Extra Heavy, Schedule 80
Cold Drawn, Annealed,
and Pickled

20 Foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.540	.302	.119	.535
$\frac{3}{8}$	.675	.423	.126	.739
$\frac{1}{2}$	.840	.546	.147	1.09
$\frac{3}{4}$	1.05	.742	.154	1.47
1	1.315	.957	.179	2.17
$1\frac{1}{4}$	1.66	1.278	.191	3.00
$1\frac{1}{2}$	1.90	1.50	.200	3.63
2	2.375	1.939	.218	5.02
$2\frac{1}{2}$	2.875	2.323	.276	7.66
3	3.50	2.90	.300	10.25
$3\frac{1}{2}$	4.00	3.364	.318	12.51
4	4.50	3.826	.337	14.98

WELDED PIPE
TYPES 304 and 304L
TYPES 316 and 316L

Schedule 5
Annealed and Pickled
20 foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.840	.710	.065	.538
$\frac{3}{4}$	1.050	.920	.065	.683
1	1.315	1.185	.065	.867
$1\frac{1}{4}$	1.660	1.530	.065	1.107
$1\frac{1}{2}$	1.900	1.770	.065	1.274
2	2.375	2.245	.065	1.604
$2\frac{1}{2}$	2.875	2.709	.083	2.475
3	3.500	3.334	.083	3.029
$3\frac{1}{2}$	4.000	3.834	.083	3.472
4	4.500	4.334	.083	3.195
5	5.563	5.345	.109	6.349
6	6.625	6.407	.109	7.585
8	8.625	8.407	.109	9.914
10	10.750	10.482	.134	15.190
12	12.750	12.438	.156	20.980

STAINLESS STEEL

WELDED PIPE

TYPES 304 and 304L

TYPES 316 and 316L

Schedule 10

Annealed and Pickled

20 Foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.405	.307	.049	.1863
$\frac{1}{4}$	.540	.410	.065	.3297
$\frac{3}{8}$	.675	.545	.065	.4235
$\frac{1}{2}$	.840	.674	.083	.6710
$\frac{3}{4}$	1.050	.884	.083	.8572
1	1.315	1.097	.109	1.404
$1\frac{1}{4}$	1.660	1.442	.109	1.806
$1\frac{1}{2}$	-	1.900	.109	2.085
2	2.375	2.157	.109	2.638
$2\frac{1}{2}$	2.875	2.635	.120	3.531
3	3.500	3.260	.120	4.332
$3\frac{1}{2}$	4.000	3.760	.120	4.973
4	- 4.500	4.260	.120	5.613
5	5.563	5.295	.134	7.769
6	6.625	6.357	.134	9.289
8	8.625	8.329	.148	13.40
10	10.750	10.420	.165	18.65
12	12.750	12.390	.180	24.17

WELDED PIPE

TYPES 304 and 304L

TYPES 316 and 316L

Schedule 40

Annealed and Pickled

20 Foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.405	.269	.068	.2447
$\frac{1}{4}$	.540	.364	.088	.4248
$\frac{3}{8}$	.675	.493	.091	.5676
$\frac{1}{2}$	.840	.622	.109	.8510
$\frac{3}{4}$	1.050	.824	.113	1.131
1	1.315	1.049	.133	1.679
$1\frac{1}{4}$	1.660	1.380	.140	2.273
$1\frac{1}{2}$	1.900	1.610	.145	2.718
2	2.375	2.067	.154	3.653
$2\frac{1}{2}$	2.875	2.469	.203	5.793
3	3.500	3.068	.216	7.576
$3\frac{1}{2}$	4.000	3.548	.226	9.109
4	4.500	4.026	.237	10.79
5	5.563	5.047	.258	14.62
6	6.625	6.065	.280	18.97
8	8.625	7.981	.322	28.55
10	10.750	10.020	.365	40.48
12	12.750	12.000	.375	49.56

SHEET • PLATE

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MONEL-NICKEL

HYDRAULIC TUBING
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FOUNDRY DATA
BRAZING PRODUCTS

STAINLESS STEEL

WELDED PIPE
TYPES 304 and 304L
TYPES 316 and 316L

Schedule 80
Annealed and Pickled
20 Foot Random Lengths

IPS (in inches)	O.D. (in inches)	I.D. (in inches)	Wall Thickness (in inches)	Pounds per Lineal Foot
2½	2.875	2.323	.276	7.66
3	3.500	2.900	.300	10.25
3½	4.000	3.364	.318	12.50
4	4.500	3.826	.337	14.98
5	5.563	4.813	.375	20.78
6	6.625	5.761	.432	28.57
8	8.625	7.625	.500	43.39
10	10.750	9.750	.500	54.74
12	12.750	11.750	.500	65.42

**TYPICAL LADLE
ANALYSIS —
WELDED STAINLESS
TUBING AND PIPE**

Analyses Chart (Per Cent)

Type No.	Carbon (*)	Chromium	Nickel	Other Elements
302	.15	17-19	8-10	
304	.08	18-20	8-12	
304L	.03	18-20	8-12	
305	.12	17-19	10-13	
309	.20	22-24	12-15	
309S	.08	22-24	12-15	
309SCB	.08	22-24	12-15	CB 10 X C MINIMUM 1 MAXIMUM
310	.25	24-26	19-22	
310S	.08	24-26	19-22	
316	.08	16-18	10-14	MO 2-3
316L	.03	16-18	10-14	MO 2-3
317	.08	18-20	11-15	MO 3-4
321	.08	17-19	9-12	TI 5 X C MINIMUM
321H	.04-.10	17-19	9-12	TI 5 X C MINIMUM
329	.20	23-28	2½- 5	MO 1-2
330	.15	14-16	33-36	
347	.08	17-19	9-13	CB-TA 10 X C MINIMUM
348	.08	17-19	9-13	CB-TA 10 X C MINIMUM TA .10 MAXIMUM
430	.12	14-18		
442	.20	18-23		
443	.20	18-23		CU .9-1.25

(*) Maximum — unless otherwise indicated.

Note: Practically all welded stainless tubing specifications carry silicon, manganese, sulphur, and phosphorus requirements in addition to the elements shown. Consult the individual specification for specific requirements.

STAINLESS STEEL

TYPICAL MECHANICAL PROPERTIES — ANNEALED WELDED STAINLESS TUBING AND PIPE

Type No.	Tensile Strength (psi)	Yield Strength (psi)	Elongation 2" (%)	Rockwell Hardness "B"
302	85,000	35,000	50	85
304	85,000	35,000	50	80
304L	80,000	30,000	55	75
305	90,000	45,000	55	80
309	95,000	40,000	45	85
309S	95,000	40,000	45	85
309SCB	90,000	40,000	45	85
310	- 95,000	40,000	45	90
310S	95,000	40,000	45	90
316	85,000	35,000	50	85
316L	80,000	30,000	50	75
317	85,000	35,000	50	85
321	85,000	35,000	50	80
321H	85,000	35,000	50	80
329	105,000	80,000	25	100
330	95,000	60,000	25	90
347	85,000	35,000	45	85
348	85,000	35,000	45	85
430	75,000	40,000	25	80
442	80,000	40,000	25	85
443	85,000	45,000	20	85

Note: It should be noted that tubing .625" and under has lesser percent elongation than shown in the table.

SEAMLESS HYDRAULIC STEEL TUBING

Cold Drawn

AISI 1010, Dead Soft, Bright Finish, Annealed

Pressure Tested to 1000 P.S.I.
JIC Specification

17 to 24 Foot Random Lengths

O.D. (in inches)	Wall Thickness		Nominal I.D.	Pounds per Lineal Foot
	B.W.G.	Dec. Inch		
1/8	22	.028	.069	.0290
3/16	22*	.028	.131	.0478
	20	.035	.117	.0572
1/4	20*	.035	.180	.0804
	18*	.049	.152	.1052
	16	.065	.120	.1284
5/16	20	.035	.242	.1039
	18	.049	.214	.1382
	16	.065	.182	.1722

Continued on next page

* Stock also in cold drawn, electric welded.

HYDRAULIC TUBING
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SHEET · PLATE · ROD · SHAPES · WIRE

STAINLESS STEEL

STAINLESS STEEL

SEAMLESS HYDRAULIC STEEL TUBING (Continued)

Cold Drawn

AISI 1010, Dead Soft,
Bright Finish, Annealed

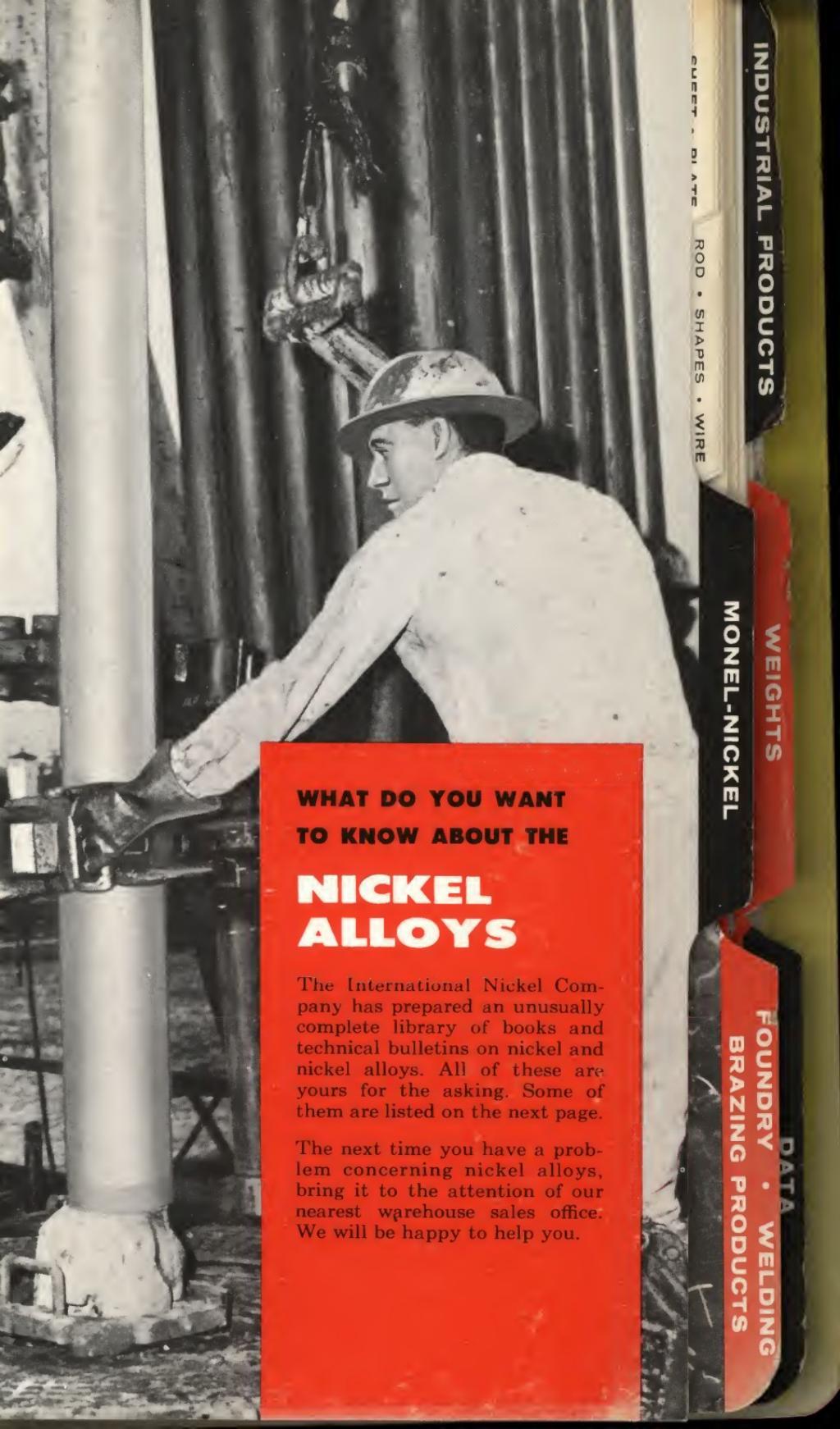
Pressure Tested to 1000 P.S.I.
JIC Specification

17 to 24 Foot Random Lengths

O.D. (in inches)	Wall Thickness		Nominal I.D.	Pounds per Lineal Foot
	B.W.G.	Dec. Inch		
$\frac{3}{8}$	20*	.035	.305	.1271
	18*	.049	.277	.1706
	17	.058	.259	.1964
	16*	.065	.245	.2152
$\frac{1}{2}$	20*	.035	.430	.1738
	18*	.049	.402	.2360
	16*	.065	.370	.3020
	15	.072	.356	.3291
	14	.083	.334	.3696
	11	.120	.260	.4870
$\frac{5}{8}$	20*	.035	.555	.2205
	18*	.049	.527	.3014
	16*	.065	.495	.3888
	14*	.083	.459	.4805
$\frac{3}{4}$	18*	.049	.652	.3668
	16*	.065	.620	.4755
	14	.083	.584	.5913
	13	.095	.560	.6646
$\frac{7}{8}$	16*	.065	.745	.5623
1	18	.049	.902	.4977
	16*	.065	.870	.6491
	14	.083	.834	.8129
	13	.095	.810	.9182
	12	.109	.782	1.037
$1\frac{1}{4}$	11	.120	1.010	1.448

* Stocked also in cold drawn electric welded.

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MONEL NICKEL

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Drawing, Shearing and Perforating Monel, Nickel and Inconel

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SEAMLESS STEEL TUBING

(Continue)

MONEL-NICKEL

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Stocks change from time to time. If the material you want is not listed here, call or write the warehouse sales office nearest you for additional information.

MONEL - NICKEL

Weight per Square Foot for
Monel* Plate, Sheet and Strip

U.S.S. Gauge	Thickness (in inches)	Weight per Square Foot	U.S.S. Gauge	Thickness (in inches)	Weight per Square Foot
—	.500	22.97	14	.078	3.58
—	.375	17.23	15	.070	3.22
3	.250	11.48	16	.062	2.85
4	.234	10.7	17	.056	2.57
5	.218	10.0	18	.050	2.30
6	.203	9.33	19	.043	1.98
7	.187	8.59	20	.037	1.70
8	.171	7.86	21	.034	1.56
9	.156	7.17	22	.031	1.42
10	.140	6.43	23	.028	1.29
11	.125	5.74	24	.025	1.15
12	.109	5.01	25	.021	.965
13	.093	4.27	26	.018	.827

*The table shown above is for Monel. To obtain approximate theoretical weight for a desired alloy, multiply the Monel weight shown in this table by the conversion factor listed below.

Alloy		Conversion Factor
New Designation	Old Designation	
MONEL alloy 400	MONEL	1.00
MONEL alloy R-405	"R" MONEL	1.00
MONEL alloy 403	MONEL "403"	1.003
MONEL alloy K-500	"K" MONEL	.956
MONEL alloy 501	"KR" MONEL	.956
NICKEL 200	"A" NICKEL	1.006
DURANICKEL alloy 301	DURANICKEL	.934
INCONEL alloy 600	INCONEL	.953
INCONEL alloy X-750	INCONEL "X"	.934
INCOLOY alloy 800	INCOLOY	.909
NI-O-NEL alloy 825	NI-O-NEL	.922

MONEL-NICKEL

MONEL SHEET

New Designation:
MONEL alloy 400

SEAMLESS STEEL TUBE

(Continued)

MONEL-NICKEL

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.250	3	36 X 96	276.0	.062	16	36 X 96	68.4
		36 X 120	345.0			36 X 120	85.5
		48 X 120	460.0			48 X 96	91.2
.187	7	36 X 96	206.16			48 X 120	114.0
		36 X 120	257.7	.050	18	30 X 96	46.0
		48 X 120	343.6			36 X 96	55.2
.156	9	36 X 120	215.1			36 X 120	69.0
		48 X 120	286.8			48 X 96	73.6
.140	10	36 X 96	154.3			48 X 120	92.0
		36 X 120	192.9	.037	20	36 X 72	30.2
		48 X 96	205.8			36 X 96	40.8
		48 X 120	257.2			36 X 120	51.0
.125	11	36 X 96	137.8			48 X 84	47.6
		36 X 120	172.2			48 X 96	54.4
		48 X 120	229.6			48 X 120	68.0
.109	12	36 X 96	120.2	.031	22	36 X 96	34.1
		36 X 120	150.3			36 X 120	42.6
		48 X 96	160.3			48 X 96	45.4
		48 X 120	200.4			48 X 120	56.8
.093	13	36 X 96	102.48	.025	24	24 X 96	18.4
		36 X 120	128.1			36 X 96	27.6
		48 X 120	170.8			36 X 120	34.5
.078	14	30 X 96	71.6	.021	25	24 X 96	15.44
		30 X 120	89.5			30 X 120	24.13
		36 X 96	85.92			36 X 96	23.16
		36 X 120	107.4	.018	26	36 X 96	19.85
		42 X 120	125.3				
		48 X 96	114.6				
		48 X 120	143.2				

* Stocked

MONEL-NICKEL

MONEL ROOFING SHEET

New Designation:

MONEL alloy 400

Hot Rolled, Annealed and
Pickled

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.031	22	24 X 96	22.78	.021	25	24 X 96	15.44
		30 X 96	28.48			30 X 96	19.30
		36 X 96	34.18			36 X 96	23.16
.025	24	24 X 96	18.37	.018	26	36 X 120	28.95
		30 X 96	22.96			24 X 96	13.23
		36 X 96	27.6			30 X 96	16.54
		. 36 X 120	34.5			36 X 96	19.85

MONEL SHEET

New Designation:

MONEL alloy 400

Cold Rolled, Annealed

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.250	3	36 X 72	206.64	.125	11	36 X 120	172.2
		36 X 96	276.0			48 X 96	183.74
		36 X 120	345.0			48 X 120	229.6
		48 X 120	460.0			48 X 144	257.62
.187	7	36 X 72	154.62	.109	12	30 X 96	100.14
		36 X 96	206.2			36 X 96	120.24
		36 X 120	257.7			36 X 120	150.30
		48 X 96	274.88			48 X 96	160.32
		48 X 120	343.6			48 X 120	200.4
.156	9	36 X 96	171.98	.093	13	48 X 144	240.34
		48X 120	286.64			30 X 96	85.44
.140	10	36 X 96	154.3			36 X 96	102.48
		36 X 120	192.9			48 X 120	170.80
		48 X 120	257.24			48 X 144	205.05
.125	11	24 X 96	91.81	.078	14	30 X 96	71.66
		30 X 96	114.84			36 X 96	85.92
		36 X 96	137.8			36 X 120	107.40

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MONEL-NICKEL

MONEL SHEET

New Designation:
MONEL alloy 400

Cold Rolled, Annealed

(Continued)

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Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.078	14	42 X 120	125.30	.037	20	36 X 96	40.80
		48 X 120	143.2			36 X 120	51.00
		48 X 144	171.98			48 X 120	68.00
		48 X 188	224.4			48 X 144	81.60
.062	16	30 X 96	56.96	.031	22	24 X 96	22.78
		36 X 96	68.40			30 X 96	28.46
		36 X 120	85.5			36 X 96	34.08
		48 X 120	114.0			36 X 120	42.6
		48 X 144	136.70			48 X 96	45.57
.050	18	30 X 96	45.94			48 X 120	56.96
		30 X 120	57.43	.025	24	24 X 96	18.37
		36 X 96	55.20			30 X 96	22.96
		36 X 120	69.0			36 X 96	27.6
		42 X 120	80.50			36 X 120	34.44
		48 X 120	91.88			42 X 120	40.18
		48 X 144	110.26	.021	25	24 X 96	15.44
.043	19	30 X 96	39.50			30 X 96	19.3
		36 X 96	47.30			36 X 96	23.16
		48 X 120	79.00			36 X 120	28.95
.037	20	24 X 96	27.20	.018	26	36 X 96	19.85
		30 X 72	25.50			36 X 120	24.81
		30 X 96	34.00				

BILLING WEIGHTS INCO ALLOY PLATES

Hot Rolled — thru 96" widths.
Monel alloy 400 used as basic weight. See conversion factors for other Inco alloys.

Decimal Thickness	Thickness (Inches)	Pounds Per Square Foot	Decimal Thickness	Thickness (Inches)	Pounds Per Square Foot
.1875	3/16	9.216	.4375	7/16	21.102
.2500	1/4	12.173	.5000	1/2	23.887
.3125	5/16	15.216	.5625	9/16	26.873
.3750	3/8	18.087	.6250	5/8	29.858

Continued on next page

MONEL-NICKEL

BILLING WEIGHTS (Con't.)

INCO ALLOY PLATES

Hot Rolled — thru 96" widths

Decimal Thickness	Thickness (Inches)	Pounds Per Square Foot	Decimal Thickness	Thickness (Inches)	Pounds Per Square Foot
.6875	11/16	32.844	2.000	2	93.709
.7500	3/4	35.830	2.125	2 1/8	99.566
.8125	13/16	38.816	2.250	2 1/4	105.423
.8750	7/8	41.802	2.375	2 3/8	111.280
.9375	15/16	44.788	2.500	2 1/2	117.137
1.0000	1	47.314	2.625	2 5/8	122.994
1.1250	1 1/8	53.228	2.750	2 3/4	128.851
1.2500	1 1/4	59.143	2.875	2 7/8	134.707
1.3750	1 3/8	65.057	3.000	3	140.564
1.500	1 1/2	70.971	3.250	3 1/4	152.278
1.625	1 5/8	76.885	3.500	3 1/2	163.992
1.750	1 3/4	82.800	3.750	3 3/4	175.705
1.875	1 7/8	88.714	4.000	4	187.419

CONVERSION FACTORS

Inco Alloy Plates — Hot Rolled

Alloy	Conversion Factor	Alloy	Conversion Factor
NICKEL 200	1.006	MONEL ALLOY 404	1.003
NICKEL 201	1.006	MONEL ALLOY K-500	0.956
NICKEL 205	1.006	INCONEL ALLOY 600	0.953
NICKEL 233	1.006	INCOLOY ALLOY 800	0.909
MONEL ALLOY 400	1.000	INCOLOY ALLOY 801	0.900
MONEL ALLOY 402	1.000	INCOLOY ALLOY 804	0.897
MONEL ALLOY 403	1.003	NI-O-NEL ALLOY 825	0.922

Billing weights for plate widths over 96" are invoiced at the actual shipping weight.

For thicknesses other than those shown, data will be furnished upon inquiry.

When calculating square footage, use three figures beyond decimal. Adjust billing weights to nearest full pounds.

EXAMPLE: Inconel Alloy 600 plate

15 pcs. - 1.750" X 37.500" X 96.750

$$\frac{37.500 \times 96.750}{\text{width} \quad \text{length}} \div 144 = \frac{25.195 \times 82.800}{\text{sq. ft.}} \times 15 \text{ Pcs} \times \frac{0.953}{\text{conversion factor}} = \frac{29821}{\text{lbs. billing weight}}$$

INDUSTRIAL PRODUCTS
ROD • SHAPES • WIRE

TUBING • PIPE

WEIGHTS

DATA
FOUNDRY • WELDING
BRAZING PRODUCTS

MONEL-NICKEL

MONEL PLATE

New Designation:
MONEL alloy 400

SEAMLES
STEEL TU

(Continu

MONEL-NICKEL

STAINLESS STEEL

BRASS

COPPER

Hot Rolled

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Plate	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Plate
.187	7	48 X 120	368.6	.500	7/0	48 X 144	1146.6
		72 X 180	829.4			60 X 120	1194.4
.250	3	36 X 96	292.2			72 X 180	2149.8
		72 X 180	1095.6	.750		48 X 120	1433.2
.375	3/0	36 X 96	434.1			48 X 144	1719.8
		36 X 120	542.6	1.000		48 X 48	757.0
		48 X 120 *	723.5			48 X 96	1514.0
		48 X 144	868.2			48 X 120	1892.6
		72 X 180	1627.8	1.250		48 X 48	946.3
.500	7/0	36 X 120	716.6			48 X 96	1892.6
		48 X 120 *	955.5				

* Annealed & Descaled

MONEL BANDING STRIP

New Designation:
MONEL alloy 400

Cold Rolled in Coils

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
.015 X 1/2	.0302	.020 X 1/2	.0382	.020 X 1 1/8	.0860
.015 X 3/4	.0454	.020 X 3/4	.0574	.020 X 6	.4590

MONEL STRAPPING SEALS

New Designation:
MONEL alloy 400

Monel Strapping seals are available in the following sizes: $\frac{1}{2} \times \frac{15}{16}$ (#12), $\frac{3}{4} \times 1\frac{1}{8}$

* Stocked

MONEL-NICKEL

INDUSTRIAL PRODUCTS

ROD • SHAPES • WIRE

TUBING • PIPE

WEIGHTS

DATA
FOUNDRY • WELDING
BRAZING PRODUCTS

"A" NICKEL SHEET

New Designation:

NICKEL 200

Cold Rolled, Annealed

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.187	7	36 X 96	207.4	.050	18	36 X 96	55.4
		48 X 120	345.6			36 X 120	69.3
.140	10	36 X 120	194.1			48 X 120	92.4
.125	11	36 X 96	138.7	.037	20	36 X 96	44.0
		48 X 120	231.2			48 X 120	68.4
.093	13	36 X 96	103.1	.031	22	36 X 96	34.4
		48 X 120	172.0			36 X 120	42.9
.078	14	36 X 96	86.5	.025	24	36 X 96	27.7
		48 X 120	144.4			48 X 96	36.9
.062	16	36 X 96	68.9	.021	25	36 X 96	23.3
		36 X 120	86.1	.018	26	36 X 96	19.9
		48 X 120	114.8				

"A" NICKEL SHEET

New Designation:

NICKEL 200

Hot Rolled, Annealed,
and Pickled

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.250	3	36 X 120	348.0	.125	11	36 X 120	173.4
		48 X 120	464.4			48 X 120	231.2
.187	7	36 X 96	207.4	.109	12	48 X 120	201.6
		48 X 120	345.6	.078	14	48 X 120	144.4
.140	10	36 X 120	194.1	.062	16	36 X 120	86.1
		48 X 120	258.8			48 X 120	114.8

MONEL-NICKEL

"A" NICKEL PLATE

New Designation:

NICKEL 200

Hot Rolled

SEAMLESS STEEL TUB

(Continued)

(i)

MONEL-NICKEL

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Plate	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Plate
.187	7	72 X 180	834	.500	7/0	72 X 180	2163
.250	3	60 X 144	735	.750		48 X 120	1442
		72 X 180	1102			48 X 144	1730
.313	1/0	48 X 144	735	1.000		48 X 48	762
.375	3/0	48 X 144	873			48 X 96	1524
		60 X 144	1092			48 X 120	1904
		72 X 180	1638	1.250		48 X 48	952
.500	7/0	48 X 144	1153			48 X 96	1904
		60 X 120	1202				

INCONEL SHEET

New Designation:

INCONEL alloy 600

Cold Rolled, Annealed

COPPER

3/4

7/8

1

1 1/4

* Stock

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.250	3	48 X 120	464.0	.050	18	36 X 96	52.5
.125	11	36 X 96	131.3	.043	19	36 X 96	45.2
		48 X 120	221.2	.037	20	36 X 96	38.9
.093	13	36 X 96	97.7	.031	22	36 X 96	32.6
		48 X 120	164.4	.025	24	36 X 96	26.3
.078	14	36 X 96	81.9	.021	25	36 X 96	22.1
.062	16	36 X 96	65.1	.018	26	36 X 96	18.9
		48 X 120	109.6				

MONEL-NICKEL

INCONEL SHEET AND PLATE

New Designation:
INCONEL alloy 600

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
1.000		48 X 96	1443
		48 X 120	1804
.750	-	48 X 120	1366
		48 X 144	1639
.625		48 X 120	1138
		48 X 144	1366
		60 X 120	1423
.500	7/0	48 X 120	911
		48 X 144	1093
		60 X 120	1138
		72 X 144	1639
.375	3/0	48 X 120	689
		48 X 144	828
		60 X 144	1034
.1875	1/0	48 X 120	480
.250	3	36 X 96	278
		48 X 120	464

**Hot Rolled, Annealed,
and Pickled**

INCONEL "X" SHEET

New Designation:
INCONEL alloy X-750

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.250	3	36 X 96	257.3
.187	7	36 X 120	240.7
.156	9	36 X 96	160.6
.125	11	36 X 96	128.7
		36 X 120	160.9
.109	12	36 X 96	112.2
.100	-	36 X 120	128.7
.093	13	36 X 96	95.8
.090	-	36 X 120	115.8
.080	-	36 X 120	103.0
.078	14	36 X 96	80.3
.070	15	36 X 120	90.1

**Cold Rolled, Annealed
and Pickled**

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.062	16	36 X 96	63.8
		36 X 108	71.8
		36 X 120	79.8
.050	18	36 X 96	51.5
		36 X 120	64.4
.045	-	36 X 120	58.0
.043	19	36 X 96	44.3
.040	-	36 X 120	51.5
.031	22	36 X 96	31.9
.025	24	36 X 96	25.7
.021	25	36 X 96	21.6

ROD • SHAPES • WIRE

TUBING • PIPE

WEIGHTS

DATA
FOUNDRY • WELDING
BRAZING PRODUCTS

MONEL-NICKEL

INCOLOY SHEET

New Designation:
INCOLOY alloy 800

Hot Rolled, Annealed,
and Pickled

SEAMLESS STEEL TUB (Continued)

(in)

MONEL-NICKEL

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet	Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Sheet
.250	3	36 X 120	312.0	.093	13	48 X 120	155.3
		48 X 120	416.0	.078	14	36 X 120	96.9
.187	7	48 X 120	310.4			48 X 120	129.2
.125	11	36 X 120	155.4	.062	16	36 X 96	62.1
		48 X 120	207.2			36 X 120	77.1
.109	12	36 X 120	135.6			48 X 120	103.5
		48 X 120	180.8				

INCOLOY PLATE

New Designation:
INCOLOY alloy 800

Hot Rolled, Annealed
and Pickled

3/4

7/8

1

1 1/4

* Stocked

Thickness in inches	U.S.S. Ga.	Size in inches	Pounds per Plate
.1875		72 X 144	603.2
.3125		72 X 144	995.9
.375	3/0	36 X 120	466.0
		72 X 144	1183.8

MONEL-NICKEL

NI-O-NEL

New Designation:
NI-O-NEL alloy 825

Ni-O-Nel is a nickel-base, corrosion-resisting alloy that is available in the following mill forms:

- Hot rolled plate and rod
- Cold rolled sheet and strip
- Seamless pipe and tubing
- Extruded seamless tubing
- Cold drawn rod

You can determine the weight per square foot of Ni-O-Nel by referring to the table on page 163. Additional technical information is given in the Data Section under the MONEL-NICKEL tab.

MONEL ROUND ROD

New Designation:
MONEL alloy 400

**Hot Rolled
Special Bolt Tolerance
Random Lengths**

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
3/8	.423	1	3.01
5/8	1.17	1 1/8	3.81
3/4	1.69	1 1/4	4.70

MONEL-NICKEL



MONEL ROUND ROD

New Designation:

MONEL alloy 400

Hot Rolled

6 to 24 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.182	$1\frac{1}{8}$	3.81	$2\frac{3}{4}$	22.7
$\frac{5}{16}$	.294	$1\frac{3}{16}$	4.24	$2\frac{7}{8}$	24.9
$\frac{3}{8}$	.423	$1\frac{3}{8}$	5.68	3	27.1
$\frac{7}{16}$	.575	$1\frac{7}{16}$	6.21	$3\frac{1}{8}$	29.4
$\frac{1}{2}$	.752	$1\frac{1}{2}$	6.75	$3\frac{1}{4}$	31.8
$\frac{9}{16}$	.951	$1\frac{5}{8}$	7.94	$3\frac{3}{8}$	34.2
$\frac{5}{8}$	1.17	$1\frac{3}{4}$	9.21	$3\frac{1}{2}$	36.8
$1\frac{1}{16}$	1.42	$1\frac{7}{8}$	10.6	$3\frac{3}{4}$	42.3
$\frac{3}{4}$	1.69	2	12.0	4	48.1
$1\frac{3}{16}$	1.98	$2\frac{1}{8}$	13.6	$4\frac{1}{8}$	51.2
$\frac{7}{8}$	2.30	$2\frac{1}{4}$	15.2	$4\frac{1}{4}$	54.3
$1\frac{15}{16}$	2.64	$2\frac{3}{8}$	17.0	$4\frac{1}{2}$	60.9
1	3.01				



MONEL ROUND ROD

New Designation:

MONEL alloy 400

Cold Drawn

6 to 20 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{16}$	.0118	$\frac{3}{4}$	1.69	$1\frac{9}{16}$	7.34
$\frac{3}{32}$	.0262	$1\frac{13}{16}$	1.96	$1\frac{5}{8}$	7.94
$\frac{1}{8}$	.047	$\frac{7}{8}$	2.30	$1\frac{11}{16}$	8.56
$\frac{3}{16}$	.106	$1\frac{15}{16}$	2.64	$1\frac{3}{4}$	9.21
$\frac{7}{32}$	.144	1	3.01	$1\frac{13}{16}$	9.88
$\frac{1}{4}$	.188	$1\frac{1}{16}$	3.39	$1\frac{7}{8}$	10.6
$\frac{5}{16}$	.294	$1\frac{1}{8}$	3.81	2	12.0
$\frac{3}{8}$	.423	$1\frac{3}{16}$	4.24	$2\frac{1}{8}$	13.6
$\frac{7}{16}$	.575	$1\frac{1}{4}$	4.70	$2\frac{1}{4}$	15.2
$\frac{1}{2}$	.752	$1\frac{5}{16}$	5.18	$2\frac{3}{8}$	17.0
$\frac{9}{16}$	.951	$1\frac{3}{8}$	5.68	$2\frac{1}{2}$	18.8
$\frac{5}{8}$	1.17	$1\frac{7}{16}$	6.21	$2\frac{3}{4}$	22.7
$1\frac{1}{16}$	1.42	$1\frac{1}{2}$	6.76	3	27.1

MONEL-NICKEL



MONEL ROUND ROD

New Designation:
MONEL alloy 400

**Cold Drawn,
Precision Straightened
10 to 26 Foot Lengths**

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
* 1/2	.751	* 1 1/4	4.70	* 2	12.0
* 9/16	.951	1 5/16	5.18	2 1/16	12.8
* 5/8	1.17	* 1 3/8	5.68	2 3/16	14.4
* 11/16	1.42	1 7/16	6.21	* 2 1/4	15.2
* 3/4	1.69	* 1 1/2	6.76	2 3/8	17.0
* 13/16	1.98	1 9/16	7.34	2 7/16	17.9
* 7/8	2.30	* 1 5/8	7.94	* 2 1/2	18.8
* 15/16	2.64	1 11/16	8.56	* 2 3/4	22.7
* 1	3.01	* 1 3/4	9.21	* 3	27.1
1 1/16	3.39	1 13/16	9.88	* 3 1/4	31.8
* 1 1/8	3.81	* 1 7/8	10.6	* 3 1/2	36.8
1 3/16	4.24	1 15/16	11.3	* 4	48.1

*This is standard size for use as Monel boat shafting. To determine proper shaft diameter, see chart in Data Section under MONEL-NICKEL tab.

MONEL ROUND ROD

New Designation:
MONEL alloy 400

**Cold Rolled
QQN-281A, Amend. 1, Class A
Stress Equalized Temper
6 to 16 Foot Random Lengths**

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/8	.047	3/4	1.69
1/2	.752	7/8	2.30
9/16	.951	1 3/8	5.68
5/8	1.17		

TUBING • PIPE

WEIGHTS

DATA
FOUNDRY • WELDING
BRAZING PRODUCTS

MONEL-NICKEL



MONEL ROUND ROD

New Designation:
MONEL alloy 400

**Forged and Rough Turned
2 to 12 Foot Random Lengths**

SEAMLESS
STEEL TUBE

(Continued)

(in)

BRASS
MONEL-NICKEL

3/4

7/8

1

1 1/4

* Stocked

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
4 3/8	57.5	5 1/8	79.1	7 1/8	152.5
4 1/2	60.9	5 1/2	90.9	8	192.0
4 5/8	67.8	6	108.0	8 1/8	198.5
5	75.2	6 1/8	112.5		

MONEL ROUND ROD

New Designation:
MONEL alloy 400

**Hot Rolled
Forging Quality
Random Lengths**

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1 11/16	8.56	3 1/4	31.8	5 *	75.2
1 7/8	10.6	3 1/2 *	36.8	6 *	108.0
2	12.0	3 5/8	39.5	8	192.0
2 1/4	15.2	4	48.1	10	301.0
2 1/2	18.8	4 1/8	51.2		
2 5/8	20.7	4 1/4	54.3		

* Also available as rough turned.

MONEL-NICKEL

INDUSTRIAL PRODUCTS

"K" MONEL ROUND ROD

New Designation:

MONEL alloy K-500

Cold Drawn
Age Hardened

6 to 16 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/2	.718	1 3/8	5.43	2 3/8	16.2
5/8	1.11	1 1/2	6.46	2 1/2	17.9
3/4	1.61	1 5/8	7.59	2 5/8	19.7
7/8	2.19	1 3/4	8.80	2 3/4	21.7
1	2.87	2	11.4	3	25.9
1 1/8	3.64	2 1/8	13.0	3 1/8	28.1
1 1/4	4.49	2 1/4	14.5	3 1/4	30.4

"K" MONEL ROUND ROD

New Designation:

MONEL alloy K-500

Cold Drawn, Heat Treated,
Precision Straightened

6 to 20 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
* 3/8	.406	1 3/16	4.07	2 1/8	13.0
* 7/16	.551	1 1/4	4.51	2 3/16	14.0
1/2	.720	1 5/16	4.97	2 1/4	14.6
* 9/16	.912	1 3/8	5.45	2 5/8	16.3
5/8	1.12	1 7/16	5.96	2 1/2	18.0
3/4	1.62	1 1/2	6.48	2 5/8	19.7
7/8	2.21	* 19/16	7.04	2 3/4	21.8
15/16	2.53	1 5/8	7.61	3	25.9
1	2.89	1 3/4	8.83	3 1/8	28.1
1 1/16	3.25	1 7/8	10.2	3 1/4	30.4
1 1/8	3.65	2	11.5		

*Not precision straightened — 6 and 12 foot random lengths.

TUBING • PIPE
WEIGHTS

FOUNDRY • WELDING
DATA
BRAZING PRODUCTS

MONEL-NICKEL

"K" MONEL ROUND ROD

New Designation:
MONEL alloy K-500

Cold Drawn, Not Heat Treated

6 to 20 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1 $\frac{1}{4}$	4.51	1 $\frac{1}{2}$	6.48	2 $\frac{1}{2}$	18.0
1 $\frac{5}{16}$	4.97	1 $\frac{5}{8}$	7.61	2 $\frac{3}{4}$	21.8
1 $\frac{3}{8}$	5.45	1 $\frac{3}{4}$	8.83	3	25.9
1 $\frac{7}{16}$	5.96	2	11.5	3 $\frac{1}{8}$	28.1
		2 $\frac{1}{4}$	14.6		

SEAMLESS STEEL
(Contin

MONEL-NICKEL

"K" MONEL ROUND ROD

New Designation:
MONEL alloy K-500

Hot Rolled

Age Hardened

Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
5/8	1.11	1 5/8	7.59	2 5/8	19.7
3/4	1.61	1 3/4	8.80	2 3/4	21.7
1	2.87	1 7/8	10.1	2 7/8	23.8
1 1/8	3.64	2	11.4	3	25.9
1 3/16	4.05	2 1/8	13.0	3 1/8	28.1
1 1/4	4.49	2 1/4	14.5	4	45.9
1 3/8	5.43	2 3/8	16.2	4 1/8	48.9
1 1/2	6.46	2 1/2	17.9		

"K" MONEL ROUND ROD

New Designation:
MONEL alloy K-500

Forging Quality
As Forged As Turned

Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
4	45.9	8	183.0
6	103.0	10	287.0

* Stocked

MONEL-NICKEL



"KR" MONEL ROUND ROD

New Designation:

MONEL alloy 501

Cold Drawn, Not Heat Treated

Free Machining

6 to 20 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
3/16	.101	3/4	1.62	1 3/8	5.45
1/4	.180	7/8	2.21	1 1/2	6.48
5/16	.282	1 5/16	2.53	1 5/8	7.61
3/8	.406	1	2.89	1 3/4	8.83
7/16	.551	1 1/8	3.65	1 7/8	10.2
1/2	.720	1 3/4	4.51	1 15/16	10.8
5/8	1.12	1 5/16	4.97	2	11.5

"R" MONEL ROUND ROD

New Designation:

MONEL alloy R-405

Free Machining, Cold Drawn

6 to 20 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/16	.0118	17/32	.849	1 3/16	4.24
3/32	.0262	9/16	.951	1 1/4	4.70
1/8	.047	19/32	1.06	1 5/16	5.18
5/32	.0733	.600	1.08	1 3/8	5.68
3/16	.106	5/8	1.17	1 7/16	6.21
13/64	.124	11/16	1.42	1 1/2	6.76
7/32	.144	23/32	1.55	1 9/16	7.34
15/64	.167	3/4	1.69	1 5/8	7.94
1/4	.188	25/32	1.84	1 11/16	8.56
17/64	.213	13/16	1.98	1 3/4	9.21
9/32	.238	27/32	2.14	1 13/16	9.88
19/64	.266	7/8	2.30	1 7/8	10.6
5/16	.293	29/32	2.47	1 15/16	11.3
23/64	.385	15/16	2.64	2	12.0
3/8	.423	31/32	2.82	2 1/8	13.6
13/32	.496	1	3.01	2 3/16	14.4
27/64	.535	1 1/16	3.39	2 1/4	15.2
7/16	.575	1 1/8	3.81	2 3/8	17.0
1/2	.751	1 5/32	4.02	2 1/2	18.8

MONEL-NICKEL

STAINLESS STEEL

BRASS

COPPER

SEAMLESS STEEL

(Continued)

MONEL-NICKEL

$\frac{3}{4}$

$\frac{7}{8}$

1

$1\frac{1}{4}$

* Stock

"A" NICKEL ROUND ROD

New Designation:
NICKEL 200

Cold Drawn

6 to 20 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{8}^*$	.047	$\frac{5}{8}$	1.18	$1\frac{1}{2}$	6.80
$\frac{5}{32}^*$	.073	$\frac{3}{4}$	1.70	$1\frac{3}{4}$	9.27
$\frac{3}{16}\dagger$	.106	$\frac{7}{8}$	2.31	2	12.07
$\frac{1}{4}\dagger$	.189	1	3.03	$2\frac{1}{4}$	15.2
$\frac{5}{16}\dagger$	.295	$1\frac{1}{4}$	4.73	$2\frac{1}{2}$	18.9
$\frac{3}{8}\dagger$	.425	$1\frac{3}{8}$	5.71	3	27.2
$\frac{1}{2}$	.76				

* 6 Foot Lengths

† 10 to 12 Foot Lengths



"A" NICKEL ROUND ROD

New Designation:
NICKEL 200

Hot Rolled
Rough Turned
Forging Quality

2 to 12 Foot Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$1\frac{11}{16}$	8.7	$2\frac{5}{8}$	20.8	$4\frac{1}{2}$	61.3
$1\frac{7}{8}$	10.7	3	27.2	6	108.6
$2\frac{1}{2}$	18.9	$4\frac{1}{4}$	54.4	8	192.0

MONEL-NICKEL

INDUSTRIAL PRODUCTS

INCONEL ROUND ROD

New Designation:

INCONEL alloy 600

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/4	.180	1	2.87
5/16	.280	1 1/4	4.48
3/8	.403	1 1/2	6.45
1/2	.716	1 3/4	8.77
5/8	1.12	2	11.43
3/4	1.61		

INCONEL ROUND ROD

New Designation:

INCONEL alloy 600

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
1/4	.180	1 1/8	3.63
5/16	.280	1 1/4	4.48
3/8	.403	1 1/2	6.45
7/16	.548	1 5/8	7.57
1/2	.716	1 3/4	8.77
5/8	1.12	2	11.43
3/4	1.61	2 1/2	17.95
7/8	2.20	3	25.73
1	2.87		

Hot Rolled

6 to 24 Foot Random Lengths

TUBING • PIPE

WEIGHTS

FOUNDRY • WELDING
DATA
BRAZING PRODUCTS

MONEL-NICKEL

INCONEL ROUND ROD

New Designation:
INCONEL alloy 600

Hot Rolled
Forging Quality
Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{11}{16}$	1.35	$1\frac{1}{2}^*$	6.44	$2\frac{5}{8}$	20.72
$\frac{7}{8}$	2.19	$1\frac{11}{16}^*$	8.16	$4\frac{1}{4}$	54.0
$\frac{3}{4}$	1.63	$1\frac{3}{4}^*$	8.77	6	108.0
1	2.86	$1\frac{7}{8}^*$	10.10	8.75	219.0
$1\frac{1}{4}^*$	4.47	$2\frac{3}{8}^*$	16.20	10.7	344.0

* Turned Finish

INCONEL ROUND ROD

New Designation:
INCONEL alloy 600

Cold Drawn
**6 to 16 Foot Random
Lengths**

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.179	$\frac{3}{4}$	1.61	$1\frac{1}{8}$	3.63
$\frac{3}{8}$	.403	$1\frac{3}{16}$	1.88	$1\frac{1}{4}$	4.47
$\frac{7}{16}$	.547	$\frac{7}{8}$	2.19	2	11.4
$\frac{1}{2}$	.716	$1\frac{5}{16}$	2.51	$2\frac{1}{4}$	14.1
$\frac{5}{8}$	1.11	1	2.86	$2\frac{1}{2}$	17.9

INCONEL "X" ROUND ROD

New Designation:
INCONEL alloy X-750

Hot Rolled
Machining Quality
Equalized Temper
Random Lengths

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{3}{4}^*$	1.57	$1\frac{3}{8}$	5.30	$3\frac{5}{8}$	36.8
$\frac{7}{8}^*$	2.14	$1\frac{7}{8}$	9.90	$4\frac{1}{4}$	50.7
1	2.81	$2\frac{1}{4}$	14.1	$4\frac{5}{8}$	60.1
$1\frac{1}{8}$	3.55	$2\frac{1}{2}$	17.5		

* Stock

*Ground Finish

MONEL-NICKEL**INCONEL "X" ROUND ROD**

New Designation:

INCONEL alloy X-750

Diameter (in inches)	Pounds per Foot
$\frac{1}{2}$	Ground Finish .702
$\frac{3}{4}$	" " 1.57
1	Rough Turned 2.81
$1\frac{1}{4}$	" " 4.38

Hot Rolled**Machining Quality****As Rolled Temper****Random Lengths**

Diameter (in inches)	Pounds per Foot
$2\frac{1}{2}$	Rough Turned 17.5
3	" " 25.3
$4\frac{1}{2}$	Rough Turned 56.8 Forging Quality

**INCONEL "X"
ROUND ROD**

New Designation:

INCONEL alloy X-750

Diameter (in inches)	Pounds per Lineal Foot
$1\frac{3}{16}$	Ground Finish 1.85
$2\frac{7}{8}$	Turned Finish 23.26
$3\frac{1}{4}$	Turned Finish 29.70

**INCONEL "X"
ROUND ROD**

New Designation:

INCONEL alloy X-750

Diameter (in inches)	Pounds per Lineal Foot
Ground Finish	
$\frac{3}{4}$	1.58
$\frac{7}{8}$	2.15
$1\frac{3}{16}$	3.96
$1\frac{3}{8}$	5.32
$1\frac{1}{2}$	6.31

**Hot Finished
Forging Quality
Random Lengths**

Diameter (in inches)	Pounds per Lineal Foot
Turned Finish	
$1\frac{7}{8}$	9.90
$2\frac{1}{8}$	12.70
$2\frac{3}{4}$	21.40
$3\frac{3}{4}$	39.51

TUBING • PIPE

WEIGHTS**FOUNDRY • WELDING
BRAZING PRODUCTS**

MONEL-NICKEL

INCONEL "X" ROUND FORGING ROD

New Designation:
INCONEL alloy X-750

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{3}{4}$	1.57	$2\frac{1}{8}$	12.70
$1\frac{3}{16}$	1.85	$2\frac{3}{4}$	21.20
$\frac{7}{8}$	2.15	$2\frac{7}{8}$	23.26
$1\frac{3}{16}$	3.96	$3\frac{1}{4}$	29.70
$1\frac{1}{4}$	4.39	6	101.0
$1\frac{3}{8}$	5.30	$8\frac{3}{4}$	215.0

SEAMLESS
STEEL
(Conti

MONEL-NICKEL

INCOLOY ROUND ROD

New Designation:
INCOLOY alloy 800

Diameter (in inches)	Pounds per Foot	Diameter (in inches)	Pounds per Foot
$\frac{1}{4}$	.170	$\frac{7}{8}$	2.09
$\frac{5}{16}$	.267	1	2.73
$\frac{3}{8}$	.384	$1\frac{1}{4}$	4.27
$\frac{7}{16}$	.522	$1\frac{1}{2}$	6.14
$\frac{1}{2}$	.683	2	10.9
$\frac{5}{8}$	1.06	$2\frac{1}{2}$	17.0
$\frac{3}{4}$	1.53		



DURANICKEL ROUND ROD

New Designation:
DURANICKEL alloy 301

Diameter (in inches)	Pounds per Lineal Foot	Diameter (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.70	$\frac{7}{8}$	2.15
$\frac{5}{8}$	1.09	1	2.81
$\frac{3}{4}$	1.58	$1\frac{1}{8}$	3.56

Cold Drawn, Heat Treated

6 to 20 Foot Random Lengths

MONEL-NICKEL



MONEL SQUARE ROD

New Designation:

MONEL alloy 400

Cold Drawn

6 to 20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/4	.24	9/16	1.21	7/8	2.93
5/16	.374	5/8	1.50	1	3.83
3/8	.538	11/16	1.81	1 1/4	5.98
1/2	.957	3/4	2.15	1 1/2	8.61

MONEL SQUARE ROD

New Designation:

MONEL alloy 400

Hot Rolled

6 to 16 Foot Random
Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
5/16	.374	7/8	2.93
3/8	.538	1	3.83
1/2	.957	1 1/4	5.98
5/8	1.50	1 1/2	8.61
3/4	2.15	2	15.3

MONEL SQUARE FORGING BILLETS

New Designation:

MONEL alloy 400

Hot Finished

Size (in inches)	Pounds per Lineal Foot
8	245
10	383
12	551

MONEL-NICKEL



"R" MONEL SQUARE ROD

New Designation:
MONEL alloy R-405

Cold Drawn, Free Machining

6 to 20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
3/8	.538	5/8	1.50	7/8	2.93
1/2	.957	3/4	2.15	1	3.83

INCONEL SQUARE FORGING ROD

New Designation:
INCONEL alloy 600

Hot Finish

Random Lengths

Size (in inches)	Pounds per Lineal Foot
2	14.58
2 1/2	22.77
3	32.88



MONEL HEXAGONAL ROD

New Designation:
MONEL alloy 400

Cold Drawn

6 to 20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
3/8	.466	3/4	1.87	1 3/8	6.27
1/2	.829	13/16	2.19	1 1/2	7.46
9/16	1.05	7/8	2.54	1 11/16	9.43
5/8	1.30	1	3.32	1 3/4	10.2
11/16	1.57	1 1/4	5.18		

MONEL-NICKEL

MONEL HEXAGONAL ROD

New Designation:

MONEL alloy 400Hot Rolled
As Rolled Temper6 to 16 Foot Random
Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/2	.829	1	3.32	1 5/8	8.75
9/16	1.05	1 1/8	4.20	2	13.3
3/4	1.87	1 1/4	5.18	2 1/8	15.0
7/8	2.54	1 7/16	6.85	2 3/8	18.7
15/16	2.91	1 1/2	7.46	2 1/2	20.7



"KR" MONEL HEXAGONAL ROD

New Designation:

MONEL alloy 501

Cold Drawn

6 to 20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot
1/2	.795
3/4	1.79
7/8	2.44



"R" MONEL HEXAGONAL ROD

New Designation:

MONEL alloy R-405

Cold Drawn, Free Machining

6 to 20 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
1/4	.207	3/4	1.87	1 5/16	5.71
5/16	.324	13/16	2.19	1 3/8	6.27
3/8	.466	7/8	2.54	1 7/16	6.85
7/16	.635	15/16	2.91	1 1/2	7.46
1/2	.829	1	3.32	1 5/8	8.75
9/16	1.05	1 1/16	3.74	1 3/4	10.2
5/8	1.30	1 1/8	4.20	1 7/8	11.7
11/16	1.57	1 1/4	5.18	2	13.3

TUBING • PIPE

NG

WEIGHTS

FOUNDRY • WELDING DATA
BRAZING PRODUCTS

MONEL-NICKEL

MONEL RECTANGULAR ROD

New Designation:

MONEL alloy 400

Hot Rolled, Annealed,

Pickled

6 to 24 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
SEAM STEEL					
(Cont)					
$\frac{1}{8} \times \frac{1}{2}$	.239	$\frac{1}{4} \times 1\frac{3}{4}$	1.68	$\frac{1}{2} \times 2$	3.83
$\frac{3}{4}$	.359	2	1.91	$2\frac{1}{2}$	4.79
1	.479	$2\frac{1}{2}$	2.39	3	5.74
$1\frac{1}{4}$	.598	3	2.87	4	7.66
$1\frac{1}{2}$	.718	4	3.83	$\frac{5}{8} \times 1$	2.39
2	.957	$\frac{3}{16} \times 1$	1.20	$1\frac{1}{4}$	2.99
$2\frac{1}{2}$	1.20	$\frac{3}{8} \times \frac{3}{4}$	1.08	2	4.79
$\frac{3}{16} \times \frac{1}{2}$	.359	1	1.44	$2\frac{1}{2}$	5.98
$\frac{3}{4}$	.538	$1\frac{1}{4}$	1.79	$\frac{3}{4} \times 1$	2.87
1	.718	$1\frac{1}{2}$	2.15	$1\frac{1}{2}$	4.31
$1\frac{1}{4}$	.897	$1\frac{3}{4}$	2.51	2	5.74
$1\frac{1}{2}$	1.08	2	2.87	$2\frac{1}{2}$	7.18
2	1.44	$2\frac{1}{2}$	3.59	3	8.61
$\frac{1}{4} \times \frac{1}{2}$	.479	3	4.31	4	11.5
$\frac{3}{4}$	.718	4	5.74	1 $\times 2$	7.66
1	.957	$\frac{1}{2} \times 1$	1.91	3	11.5
$1\frac{1}{4}$	1.20	$1\frac{1}{4}$	2.39		
$1\frac{1}{2}$	1.44	$1\frac{1}{2}$	2.87		

INCONEL RECTANGULAR ROD

Hot Rolled, Annealed,
and Pickled

New Designation:

INCONEL alloy 600

12 to 16 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times \frac{1}{2}$	.227	$\frac{3}{16} \times 2$	1.37	$\frac{3}{8} \times 2\frac{1}{2}$	3.42
$\frac{3}{4}$	.342	$\frac{1}{4} \times \frac{3}{4}$	.684	3	4.10
1	.456	1	.912	$\frac{1}{2} \times 1$	1.82
$1\frac{1}{2}$	.684	$1\frac{1}{4}$	1.14	$1\frac{1}{2}$	2.73
2	.912	$1\frac{1}{2}$	1.37	2	3.64
$\frac{3}{16} \times \frac{3}{4}$	.512	2	1.82	$2\frac{1}{2}$	4.56
1	.684	$\frac{3}{8} \times 1$	1.37	3	5.47
$1\frac{1}{4}$	.854	$1\frac{1}{2}$	2.04	$\frac{5}{8} \times 2$	4.56
$1\frac{1}{2}$	1.02	2	2.73	$\frac{3}{4} \times 1\frac{1}{2}$	4.32

MONEL-NICKEL

INCOLOY RECTANGULAR ROD

New Designation

INCOLOY alloy 800

Hot Rolled, Annealed,
and Pickled

12 to 16 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot	Size (in inches)	Pounds per Lineal Foot
$\frac{1}{8} \times 1$	.435	$\frac{1}{4} \times 1\frac{1}{2}$	1.30	$\frac{3}{8} \times 2$	2.60
$\frac{3}{16} \times 1$	.652	$\frac{3}{8} \times 1$	1.44	$\frac{1}{2} \times 2$	3.48
$\frac{1}{4} \times 1$	.869	$1\frac{1}{2}$	1.95	$\frac{5}{8} \times 2$	4.35



MONEL ANGLES

New Designation:

MONEL alloy 400

Hot Rolled, Annealed

6 to 24 Foot Random Lengths

Size (in inches)	Pounds per Foot	Size (in inches)	Pounds per Foot
$1 \times 1 \times \frac{1}{8}$	.90	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$	2.63
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	1.14	$2 \times 2 \times \frac{1}{8}$	1.85
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{3}{16}$	1.66	$2 \times 2 \times \frac{3}{16}$	2.74
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{4}$	2.15	$2 \times 2 \times \frac{1}{4}$	3.59
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$	1.38	$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$	4.55
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	2.02	$3 \times 3 \times \frac{1}{4}$	5.50



MONEL ANGLES

New Designation:

MONEL alloy 400

Hot Rolled

6 to 24 Foot Random Lengths

Size (in inches)	Pounds per Foot	Size (in inches)	Pounds per Foot
$1 \times 1 \times \frac{1}{8}$	.90	$2 \times 2 \times \frac{3}{16}$	2.74
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	1.14	$2 \times 2 \times \frac{1}{4}$	3.59
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$	2.02	$3 \times 3 \times \frac{1}{4}$	5.50
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$	2.63		

MONEL-NICKEL

INCONEL ANGLES

New Designation:
INCONEL alloy 600

Size (in inches)	Pounds per Lineal Foot
1 × 1 × $\frac{1}{8}$	.857
1 × 1 × $\frac{3}{16}$	1.23
1 × 1 × $\frac{1}{4}$	1.59

Hot Rolled, Annealed,
and Pickled

12 to 16 Foot Random Lengths

Size (in inches)	Pounds per Lineal Foot
1 $\frac{1}{2}$ × 1 $\frac{1}{2}$ × $\frac{3}{16}$	1.92
1 $\frac{1}{2}$ × 1 $\frac{1}{2}$ × $\frac{1}{4}$	2.50
2 × 2 × $\frac{1}{4}$	3.42

INCOLOY ANGLES

New Designation:
INCOLOY alloy 800

Size (in inches)	Pounds per Foot
1 × 1 × $\frac{1}{8}$	.818
1 × 1 × $\frac{3}{16}$	1.18
1 × 1 × $\frac{1}{4}$	1.51
1 $\frac{1}{2}$ × 1 $\frac{1}{2}$ × $\frac{1}{4}$	2.39
2 × 2 × $\frac{1}{4}$	3.26

Hot Rolled, Annealed,
and Pickled

12 to 16 Foot Random Lengths

MONEL ROUND WIRE, SOFT

5 lb. Spools or Random Coils

New Designation:
MONEL alloy 400

Size (in inches)	Pounds per 1000 Feet	Size (in inches)	Pounds per 1000 Feet	Size (in inches)	Pounds per 1000 Feet
.0159	.76	.0475	.0065	.072	15.56
.0253	1.92	.051	7.81	.125	46.97
.032	3.07	.064	12.30	.128	49.65
.040	4.80				

MONEL-NICKEL

ROUND SPRING TEMPER

MONEL WIRE

New Designation:

MONEL alloy 400

Random Coils

Size (in inches)	Pounds per 1000 Feet	Size (in inches)	Pounds per 1000 Feet	Size (in inches)	Pounds per 1000 Feet
.032	3.07	.081	19.65	.128	49.65
.040	4.80	.091	24.74	.144	62.62
.051	7.81	.102	31.27	.162	78.93
.064	12.30	.114	39.35	.187	105.69
.072	15.56	.125	46.97		

OTHER WIRE

Monel Metallizing wire is available in Random Coils. Soft or Spring Temper wire, and Metallizing wire is available in other alloys on request. Call our representative or the sales office nearest you for additional information.

MONEL TUBING

New Designation:

MONEL alloy 400

Cold Drawn, Seamless

Random Lengths

O.D. in inches	I.D. in inches	Wall in inches	Pounds per Lineal Foot	O.D. in Inches	I.D. in inches	Wall in inches	Pounds per Lineal Foot
$\frac{1}{4}$	.180	.035	.090	$\frac{3}{4}$	.680	.035	.301
	.152	.049	.118		.620	.065	.536
$\frac{5}{16}$	.243	.035	.117	$\frac{7}{8}$	.805	.035	.354
$\frac{3}{8}$	.305	.035	.143		.745	.065	.633
	.277	.049	.192	1	.870	.065	.731
	.245	.065	.242		.834	.083	.915
$\frac{1}{2}$	.430	.035	.195	$1\frac{1}{4}$	1.120	.065	.926
	.416	.042	.231	$1\frac{1}{2}$	1.370	.065	1.12
	.370	.065	.340	2	1.870	.065	1.51
$\frac{5}{8}$	.527	.049	.340	$2\frac{1}{4}$	2.120	.065	1.71
				$2\frac{1}{2}$	2.334	.083	2.41

MONEL CONDENSER TUBING

New Designation:

MONEL alloy 400

Cold Drawn, Seamless

Annealed

Ends Deburred

O.D. in Inches	Wall in Inches	Length in Feet	Pounds per Lineal Foot	O.D. in Inches	Wall in Inches	Length in Feet	Pounds per Lineal Foot
$\frac{3}{4}$	.065	16	.535	$\frac{3}{4}$	.083	16	.666
$\frac{3}{4}$	.065	20	.535	1	.083	12	.915
$\frac{3}{4}$	.083	12	.666	$1\frac{1}{4}$	.083	8	1.17

TUBING • PIPE

WEIGHTS

FOUNDRY • WELDING
DATA
BRAZING PRODUCTS

MONEL-NICKEL

**SEAM
STEEL**
(Cont)

MONEL-NICKEL

INCONEL TUBING

New Designation:
INCONEL alloy 600

O.D. in inches	Wall in inches	Pounds per Lineal Foot	O.D. in inches	Wall in inches	Pounds per Lineal Foot
$\frac{1}{4}$	.049	.114	$\frac{9}{16}$	.035	.214
$\frac{5}{16}$	.035	.113	$\frac{5}{8}$	.035	.239
$\frac{3}{8}$	.035	.138	$\frac{7}{8}$	.035	.340
$\frac{1}{2}$	.035	.189			

INCONEL "X" TUBING

New Designation:
INCONEL alloy X-750

Cold Drawn
AMS 558
6 to 24 Foot Random Lengths

O.D. in Inches	Wall in Inches	Pounds per Lineal Foot
$\frac{5}{16}$	.035	.113
$\frac{1}{2}$	.035	.189

INCOLOY TUBING

New Designation:
INCOLOY alloy 800

**As Extruded, Medart
Straightened, Pickled Finish**

**21, 22 Foot, 6 inch and
23 Foot Exact Lengths**

O.D. in inches	I.D. in inches	Wall in inches	Pounds per Lineal Foot
4 $\frac{1}{2}$	4.00	.250	13.17

MONEL-NICKEL

INDUSTRIAL PRODUCTS

MONEL PIPE

New Designation:

MONEL alloy 400

Cold Drawn, Seamless

Standard Weight, Schedule 40

10 to 20 Foot Random Lengths

Also Available in Annealed Condition

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/8	.405	.269	.068	.276
1/4	.540	.364	.088	.478
3/8	.675	.493	.091	.639
1/2	.840	.622	.109	.958
3/4	1.050	.824	.113	1.27
1	1.315	1.049	.133	1.89
1 1/4	1.660	1.380	.140	2.56
1 1/2	1.900	1.610	.145	3.06
2	2.375	2.067	.154	4.11
2 1/2	2.875	2.469	.203	6.52
3	3.500	3.068	.216	8.53
4	4.500	4.026	.237	12.14
6	6.625	6.065	.280	21.4
8	8.625	7.999	.313	32.2

MONEL PIPE

New Designation:

MONEL alloy 400

Cold Drawn, Seamless

Schedule 10

10 to 20 Foot Random Lengths

Also Available in Annealed Condition

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1	1.315	1.097	.109	1.58
1 1/2	1.900	1.682	.109	2.350
2	2.375	2.157	.109	2.97
3	3.500	3.260	.120	4.880
4	4.500	4.260	.120	6.320

WEIGHTS

FOUNDRY • WELDING DATA
BRAZING PRODUCTS

MONEL-NICKEL

MONEL PIPE

New Designation:

MONEL alloy 400

Cold Drawn, Seamless
Extra Heavy, Schedule 80
10 to 20 Foot Random Lengths

Also Available in Annealed Condition

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/8	.405	.215	.095	.354
1/4	.540	.302	.119	.603
3/8	.675	.423	.126	.832
1/2	.840	.546	.147	1.230
5/8	1.050	.742	.154	1.660
1	1.315	.957	.179	2.450
1 1/4	1.660	1.278	.191	3.370
1 1/2	1.900	1.500	.200	4.090
2	2.375	1.939	.218	5.660
2 1/2	2.875	2.323	.276	8.630
3	3.500	2.900	.300	11.500
4	4.500	3.826	.337	16.900

SEAMI
STEEL
(Conti

MONEL-NICKEL

"A" NICKEL PIPE

New Designation:

NICKEL 200

Cold Drawn, Seamless
Standard Weight, Schedule 40
10 to 20 Foot Random Lengths
Also Available in Annealed Condition, Stress Relieved, or Both

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
1/8	.405	.269	.068	.277
1/4	.540	.364	.088	.481
3/8	.675	.493	.091	.643
1/2	.840	.622	.109	.964
5/8	1.050	.824	.113	1.280
1	1.315	1.049	.133	1.900
1 1/4	1.660	1.380	.140	2.580
1 1/2	1.900	1.610	.145	3.080
2	2.375	2.067	.154	4.140
2 1/2	2.875	2.469	.203	6.560
3	3.500	3.068	.216	8.580
4	4.500	4.026	.237	12.200
6	6.625	6.065	.280	21.500
8	8.625	7.981	.322	32.39

MONEL-NICKEL

INDUSTRIAL PRODUCTS

"A" NICKEL PIPE

New Designation:

NICKEL 200

Cold Drawn, Seamless

Schedule 10

10 to 20 Foot Random Lengths

Also Available in Annealed
Condition, Stress Relieved, or
Both

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.840	.674	.083	.761
1	1.315	1.097	.109	1.589
$1\frac{1}{2}$	1.900	1.682	.109	2.36
2	2.375	2.157	.109	2.990
$2\frac{1}{2}$	2.875	2.635	.120	4.004
3	3.500	3.260	.120	4.910
4	4.500	4.260	.120	6.360
6	6.625	6.357	.134	10.513

"A" NICKEL PIPE

New Designation:

NICKEL 200

Cold Drawn, Seamless

Extra Heavy, Schedule 80

10 to 20 Foot Random Lengths

Also Available in Annealed
Condition, Stress Relieved, or
Both

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{4}$	.540	.302	.119	.606
$\frac{3}{8}$	.675	.423	.126	.837
$\frac{1}{2}$	.840	.546	.147	1.23
$\frac{3}{4}$	1.050	.742	.154	1.670
1	1.315	.957	.179	2.460
$1\frac{1}{4}$	1.660	1.278	.191	3.400
$1\frac{1}{2}$	1.900	1.500	.200	4.120
2	2.375	1.939	.218	5.690
3	3.500	2.900	.300	11.600
4	4.500	3.826	.337	17.000

WEIGHTS

DATA
FOUNDRY • WELDING
BRAZING PRODUCTS

MONEL-NICKEL

INCONEL PIPE

New Designation:

INCONEL alloy 600

Seamless

Cold Drawn, Annealed, and Pickled

Standard Weight, Schedule 40

10 to 20 Foot Random Lengths

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{8}$	.405	.269	.068	.264
$\frac{1}{4}$	.540	.364	.088	.460
$\frac{3}{8}$	.675	.493	.091	.615
$\frac{1}{2}$	.840	.622	.109	.922
$\frac{3}{4}$	1.050	.824	.113	1.23
1	1.315	1.049	.133	1.82
$1\frac{1}{4}$	1.660	1.380	.140	2.46
$1\frac{1}{2}$	1.900	1.610	.145	2.95
2	2.375	2.067	.154	3.96
$2\frac{1}{2}$	2.875	2.469	.203	6.28
3	3.500	3.068	.216	8.21
4	4.500	4.026	.237	11.70
6	6.625	6.065	.280	20.39

INCONEL PIPE

New Designation:

INCONEL alloy 600

Cold Drawn, Annealed

Schedule 80

10 to 20 Foot Random Lengths

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.840	.546	.147	1.172
$\frac{3}{4}$	1.050	.742	.154	1.582

INCOLOY PIPE

New Designation:

INCOLOY alloy 800

Cold Drawn, Annealed, and Pickled

Standard Weight, Schedule 40

10 to 20 Foot Random Lengths

I.P.S. (in inches)	O.D. (in inches)	I.D. (in inches)	Wall (in inches)	Pounds per Lineal Foot
$\frac{1}{2}$	.840	.622	.109	.865
$\frac{3}{4}$	1.050	.824	.113	1.15
1	1.315	1.049	.133	1.71
$1\frac{1}{4}$	1.660	1.380	.140	2.31

SEAML
STEEL

(Conti-

MONEL-NICKEL

STAINLESS STEEL

COPPER

WHAT DO YOU WANT
TO KNOW ABOUT

FOUNDRY PRODUCTS

Foundry additives and alloying technique have made tremendous advances in recent years. Proper addition of alloying elements improves qualities of corrosion resistance, toughness, hardness, and provides higher tensile strength.

Free literature on foundry products is available as well as advice and counsel of our foundry specialists and research departments of our suppliers.

WHAT DO YOU WANT
TO KNOW ABOUT

WELDING & BRAZING ALLOYS

A considerable amount of literature on welding and brazing alloys, and the joining of metals by these processes, is yours free. Some of the booklets available are listed on the following page.

In addition, technical sales personnel are ready always to help you with your problems. Call, when you need assistance.



FOUNDRY WELDING BRAZING

Brazing Materials

- Aluminum.....204, 205
- Silver Alloy.....213-218
- Rings, Shapes, Special Shapes....217

Fluxes

- Brazing — Aluminum.....205
- Handy Flux — Silver Brazing....217
- Soldering — Aluminum.....205
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Foundry Products.....197-203

- A - Z Listing.....200-203
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- Electrolytic Nickel.....198
- Nickel Ingot.....198
- Nickel Shot.....198
- "F" Grade.....198

Silver Brazing Alloys.....213-218

Solder — Aluminum.....205

Welding Materials

- Aluminum.....204, 205
- Copper & Bronze.....212
- Fluxes.....205, 208, 217
- Nickel Alloy Electrodes.....206
- Nickel Alloy Rod & Wire.....207
- Stainless Steel Electrodes &
Wire.....210, 211

SEAM
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MONEL-NICKEL

16 FOUNDRY • WELDING
BRAZING PRODUCTS

The number and types of items carried in stock are always changing to meet customers' needs. If the product you want is not listed here, call or write our nearest warehouse sales office for additional information.

LITERATURE REQUESTS

There are many technical booklets and pamphlets available to you, free. If you would like to receive information on a particular product or application, please write outlining your needs. We will do our best to help you find an answer.

LITERATURE ON FOUNDRY PRODUCTS

- A Quick Guide to Nickel-Containing Casting Alloys
- Vancoram Products
- Shieldalloy Products

LITERATURE ON WELDING AND BRAZING PRODUCTS

- Manual for Welding Stainless Steels

Alcoa Filler Metal Selection Chart

- Brazing Alcoa Aluminum
- Welding Alcoa Aluminum
- Anaconda Copper-Alloy
Brazing and Welding Rods

Inco Welding Products

Inco-Weld A Electrode

Brazing and Soldering Nickel and High-Nickel Alloys

Fusion Welding of Nickel and High-Nickel Alloys

Resistance Welding

Welding Cast Irons Quickly and Easily with NI-ROD and NI-ROD "55" ELECTRODES

Inco's Huntington Welding Materials

Easy-Flo and Sil-Fos Brazing Alloys

Brazing Alloy Selection Chart for Copper and Copper Alloys

7 Reasons Why Stainless Steels Should Be Joined by Silver and Gold Alloy Brazing

Why HANDY FLUX is First by Far for Superior Low-Temperature Brazing

TELEPHONES OF OFFICES AND WAREHOUSES

- New York, New York.....WOrth 4-2800
- Carteret, N. J.YOrkton 9-2000
- Cambridge, Mass.TRowbridge 6-4680
- Harrison N. J.HUmboldt 5-5900
- Philadelphia, Pa.BAldwin 9-2323
- Baltimore, Md.WIndsor 4-2000
- Buffalo, N. Y.TRiangle 6-3100
- Syracuse, N. Y.HOrward 3-6241
- Windsor, Conn.'phone 688-4921
- Rochester, N. Y.BUller 8-2141

FOUNDRY ALLOY PRODUCTS

In recent years, tremendous strides have been made in improving the properties of the common engineering metals; for instance, advances in alloying techniques make possible the production of cast irons which are a far cry from the low-strength brittle casting of 25 years ago. By the proper addition of alloying elements improved qualities of corrosion resistance, toughness, hardness and higher tension strengths have been attained.

Special types of cast iron (Ni-Resist) have high heat and corrosion resistance, and one type (Ni-Hard) is hard enough to scratch glass, as does the diamond. Some irons can be stretched and bent, having an elongation as high as 25 to 30% with tensile strengths many times that of ordinary irons (ductile irons). Cast irons are being produced to match the thermal expansion of metals such as steel or aluminum or to minimum expansion specifications.

Cast iron is but one of the foundry products which has shown vast improvement. Steels and bronzes have been improved to meet the demands of industry for higher processing temperatures and accelerated operating speeds. The proper use of alloying materials such as nickel, chromium, molybdenum, silicon, vanadium, manganese, enables the foundryman today to meet his customer's most exacting specifications.

A user of castings may now go to his foundryman and ask for increased machinability with higher strength in a specified part, or higher ductility coupled with corrosion resistance, or if a need demands greater wear and heat resistance together with resistance to shock and impact, this, too, may be acquired by the proper and intelligent use of foundry alloying material. The foundry, as well as the user of castings, has available the experience and services of our foundry engineers, backed by the development and research departments of The International Nickel Company, Inc., The Vanadium Corporation of America, Shieldalloy Corporation, and Climax Molybdenum Company.

WELDING • BRAZING

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FOUNDRY PRODUCTS

FOUNDRY PRODUCTS — NICKEL

ELECTROLYTIC NICKEL SQUARES

1" x 1", 4" x 4" — In Approximately 500-pound Drums

2" x 2", 9" x 9" " " 725-Pound "

4" x 4" Available in 1600- and 3000-Pound Fibreboard Boxes

Electrolytic Nickel is the purest form of nickel produced in commercial quantities. It contains only a trace of sulphur and carbon. It is used principally for alloying with steel and for the production of nickel silver and pure nickel castings.

"QM" (QUICK MELTING) ELECTRO SQUARES

1" x 1" Thin Squares

In 425-Pound Drums

A specialized form of electrolytic nickel in thin section for quick melting in the non-ferrous foundry. It is readily dissolved by molten brass, bronze and aluminum at temperatures below the melting point of nickel.

NICKEL INGOTS

Approximately 10 Pounds Each in 660-Pound Drums

A demand for nickel in ingot form exists in the ferrous metal industries where this form is preferred to electrolytic nickel cathodes. It is used in the production of low alloy cast irons, Ni-Hard, and Ni-Resist.

"XX" NICKEL SHOT

475-Pound Drums

Nickel Shot is one of the oldest commercial forms of nickel in use. Its major application is in those types of furnaces where its form and size is desirable. Its size is accomplished by screening to pass through a 1" opening, and remaining on a .053" opening.

"F" NICKEL SHOT AND INGOT

Shot in 500-Pound Drums

Ingots of Approximately 5 Pounds for Cupola Additions

Ingots Packed in 485-Pound Drums

Developed especially for ladle additions in gray iron foundries. Silicon, iron, and carbon additives help reduce the melting point to approximately 2300° F. — below that of pure nickel (2640° F.) — and it assures rapid solution at even the lower temperature levels of molten iron. Shot is sized through $\frac{1}{4}$ " screen opening and retained on .0193" opening. This facilitates efficient handling through funnels or other charging apparatus.

5-pound ingots are of optimum size for direct charging into the cupola for the volume production of nickel cast irons.

SEAML
STEEL

(Conti

MONEL-NICKEL

3/4

FOUNDRY & WELDING
BRAZING PRODUCTS

FOUNDRY PRODUCTS

FOUNDRY PRODUCTS — NICKEL

INDUSTRIAL PRODUCTS

WELDING • BRAZING

WEIGHTS

DATA

DUCTILE IRON ADDITIVES

The Ductile Iron Additives, nickel-magnesium (NMA No. 1) and nickel-magnesium-silicon (NMSA No. 2), are available from warehouse stocks to licensed producers of Ductile Iron. Either additive is available in a large or small size. The large size passes through $2\frac{1}{4}$ " diameter to $\frac{3}{4}$ " diameter, and the small size passes through 1" diameter to be retained on 8 mesh.

These additives are employed in the licensed foundry production of Ductile Iron, which is a cast ferrous product that combines the process advantages of cast iron with many of the product advantages of cast steel. It offers excellent castability, high strength, good machinability, and marked resistance to wear and impact. Useful applications include gears, bearing sleeves, sprockets, crankshafts, wrenches, manifolds, compressor heads, and clamps, to mention just a few.

Using the process originated with Ductile Cast Iron, another versatile engineering material, Ductile Ni-Resist*. Cast Iron is now being produced by licensed foundries. The resistance of the Ni-Resist* irons to corrosion, erosion, metal-to-metal wear and to elevated temperatures, plus their castability and machinability are retained in this alloy. Added advantages are strength and ductility approaching that of cast steel.

NON-FERROUS ALLOYS AND INGOTS

Nickel Bronzes and Nickel Silvers

Additions of up to 5% of nickel to common brass and bronze foundry mixtures have long been recognized as an inexpensive and practical method of improving the properties of such mixtures. Nickel, when added to these mixes, increases the density (pressure tightness), raises the strength, and improves the toughness of the metal. Additions of approximately 5% nickel and 5% tin to copper have been found to yield the optimum combination of properties and economy. The Ni-Vee* bronzes are a family of five such alloys whose compositions are pivoted around the 5% nickel, 5% tin level. In the "as cast" condition, Ni-Vee* bronzes provide properties superior to those of comparable G bronze, red brasses, and leaded bearing bronzes. Through simple heat treatments that control a nickel-tin copper precipitation reaction, the superior "as cast" properties of the Ni-Vee* bronzes can be improved even further.

Completed information on the production and applications of Nickel Bronzes, and Nickel Silvers will be sent on request.

Available Literature: "Engineering Properties and Applications of Ni-Vee Bronzes".

*Trade-Mark

FOUNDRY PRODUCTS

SEAMI
STEEL
(Conti

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

ALSIFER

(Approx. 20% Al, 40% Si, 40% Fe)

ALUMINUM

Grained Aluminum (99.5% Min. Al)

Titanium Aluminum (50% Ti grade)

Vanadium Aluminum (2½%, 5%, 40%, and 85% V)

Zirconium Aluminum (about 50-50 ratio)

Molybdenum Aluminum (60% Mo. - 40% Al)

Ingot

Hardeners

5½% Ti. Al.

0.1% B. 5% Ti. Al.

1.0% B. 5% Ti. Al.

10% Cr. Al.

15% Cr. Al.

20% Cr. Al.

5% Mn. Al.

7% Mn. Al.

10% Mn. Al.

BORON

Ferroboron (14-18% B)

CALCIUM SILICON

Calcium Silicon (30% Ca. - 60% Si.)

CALSILOY

Calsiloy (12-16% Ca., 55-60% Si. Bal. Fe.)

CHROMIUM

Chromium Metal - High Carbon

Chromium Metal - "99"

Chromium Metal - Vacuum Melting Grade

Chromium Columbium (35% Cr, 65% Cb)

Chromium Tungsten (60% Cr, 40% W)

Chromium Molybdenum (68% Cr, 30% Mo or 28% Cr, 70% Mo)

FERROCHROMIUM

Ferrochromium Briquettes (2# Cont. Cr)

	% Chromium	% Carbon	% Silicon
Standard Exlo	68-73	.025 max.	2.00 max.
Standard Exlo	68-73	.050 max.	2.00 max.
Exlo "75"	75 min.	.015 max.	0.75 max.
Low Carbon 65-5	63-67	.050 max.	4-6
3% Nitrogen Grade	67 approx.	.060 max.	1.00 max.
High Carbon	66-70	4-6	1-2
Charge Grade 58-65	58-65	5.25 max.	3.00 max.
Charge Grade 63-68	63-68	7-8	3-5
Refined Charge Grade	58-65	4.25 max.	1.00 max.
Blocking Grade	55-63	4-6	8-12
Foundry Grade	55-63	4-6	8-12
Ferrochrome Silicon (40-42)	39-42	.05 max.	40-42
Ferrochrome Silicon (36-40)	36 approx.	.05 max.	40 approx.
Ferrochrome Silicon (49-28)	48-52	1.25 max.	25-30
Intermediate Silicon	67-71	.05 max.	0.75-2.00

COLUMBIUM

Columbium Chromium (65% Cb, 35% Cr)

Columbium Nickel (45-55% Cb, 40-50% Ni)

Columbium Metal (High Purity Grade I)

Columbium Metal (High Purity Grade II)

Ferrocolumbium - Reactor Grade (57-67% Cb)

FOUNDRY PRODUCTS

COLUMBIUM (Continued)

Ferrocolumbium (62-67% Cb)
 Ferrocolumbium 10:1 Ratio (Cb to Ta)
 Ferrocolumbium Tantalum (45-55% Cb, Approx. 12% Ta)
 Thermocol (Exothermic Approx. 53% Cb)

DUCTILE IRON ADDITIVES

	% C	% Ni	% Mg	% Si	% Ca	% Ce	% Cu	% Fe
NMA # 1	2	82	13-16					
NMSA #2		51	13-16	35				5 Max.
* Calsifer 75				74-79	.5 min			Bal.
* Calsifer 85				80-90	.5 min			Bal.
Noduloy 6C			5½-7½	44-48		.5-.7		
Noduloy 7			8-9½	43-47			4½-6½	Bal.
Noduloy 7C			8-9½	43-47		.5-.7	4½-6½	Bal.
Noduloy 8			8-9½	44-48				Bal.
Noduloy 8C			8-9½	44-48		.5-.7		Bal.
Noduloy 12			10½-13	37-41			15-18	Bal.
Noduloy 18C			18-20	60-65		.5-.7		Bal.
Noduloy 33			33	50				Bal.
Noduloy 40			40	40				Bal.
70-30 Alloy	70	30						

* Also available with 1½ and 2½ Min. Calcium

EXOTHERMIC ALLOYS

Thermocol (Approx. 53% Cb)
 Thermasil (Approx. 61% Si)
 Thermovan (V)

GRAINAL

#1 (25%, V, 15% Ti, 10% Al, 0.20% B)
 #79 (20% Ti, 13% Al, 4% Zr, 8% Mn, 5% Si, 0.50% B)
 #100 (20% Ti, 13% Al, 4% Zr, 8% MN, 5% Si, 1% B)
 #790 (20% Ti, 13% Al, 4% Zr, 8% Mn, 5% Si)

GRAPHIDOX

#4 (48-52% Si, 9-11% Ti, 5-7% Ca)

MANGANESE

Electrolytic Manganese Metal

Tronomang Regular

Tronomang Extra Low-Hy

Tronomang Nitro-4

Tronomang Nitro-6

Tronomang Low-Hy

Briquettes (2# Mn contained)

Ferromanganese (74-76%) Standard High Carbon

MOLYBDENUM

Molybdenum Chromium (30%, Mo. 68% cr or 70% Mo, 28% Cr)

Molybdenum Aluminum (60% Mo, 40% Al)

Molybdenum Rondelles - Vacuum Melting Grade (99.8% Mo. Min.)

Molybdenum Powder (99.8% Mo Min.)

Molybdenum Tablets (99.8% Mo Min.)

NICKEL

Nickel Columbium (40-50% Ni, 45-55% Cb)

Nickel Selenium

Nickel Titanium (80% Ni, 20% Ti)

Electrolytic Nickel (99.95% Ni Including Cobalt)

1" QM squares

1" sqs. (about 3/8" thick)

FOUNDRY PRODUCTS

NICKEL (Continued)

2" sqs. (about 3/8" thick)
4" sqs. (about 3/8" thick) about 2½ lbs. each
9" sqs. (about 3/8" thick) about 12 lbs. each
4½" x 28½" (about 3/8" thick) about 18 lbs. each
9" x 28½" (about 3/8" thick) about 36 lbs. each
12" x 28½" (about 3/8" thick) about 45 lbs. each
38" x 28½" (about 3/8" thick) about 145 lbs. each
4" x 8" (about .015" thick)

Grade XX Shot

1" on .053"
1/2" x 3/16"
3/8" on .053"

Thru. .071" High Sulphur Steam Shattered
Thru. .053" Low Sulphur Steam Shattered

F. Nickel Shot - 1/4" on 30 mesh

F. Nickel Ingot - 5# size

Nickel Ingot - 10# size

NMA #1 2 1/4" on ¾" and 1" on 8 mesh

NMSA #2 2 1/4" on ¾" and 1" on 8 mesh

Nickel Oxide Sinter

Black Nickel Oxide thru ¼"

Green Nickel Oxide thru ¼"

SELENIUM

Ferro Selenium

Nickel Selenium

SILICOMANGANESE

Briquettes (½# Si Plus 2# Mn contained)

18-20% Grade Silicon (65-68% Mn) 1½ Max. C

15-17½% Grade Silicon (65-68% Mn) 2% Max. C

12-14½% Grade Silicon (65-68% Mn) 3% Max. C

SILVERY PIG

12 grades in .50% increments from 13½% to 19½% and 22% grade
in 12½# piglets, 30 lb., 45 lb., and 60 lb. pigs.

SILICON

Briquettes (1# or 2# Si, contained)

Ferrosilicon

50% Regular

50% Low Impurity (.50% Max. Al)

50% with Boron

65% Regular

65% Low Impurity (.50% Max. Al)

75% Regular

75% Low Impurity (.50% Max. Al)

80-90% Regular

80-90% Low Impurity (.50% Max. Al)

90-95% Regular

90-95% Low Impurity (.50% Max. Al)

Thermosil (Exothermic)

Silicon Metal Max. .35% iron

Silicon Metal Max. .50% iron

Silicon Metal Max. 1.00% iron

Silicon Metal Max. 1.50% iron

Lithium Ferrosilicon

Inoculoy 63

STAINLESS STEEL

SEAM
STEEL
(Cont)

MONEL-NICKEL

COPPER

FOUNDRY • WELDING
BRAZING PRODUCTS

FOUNDRY PRODUCTS

TANTALUM

(99.5-99.9% Guaranteed)

TITANIUM

- Titanium Aluminum (50% Ti grade)
- Titanium Nickel (20% Ti, 80% Ni)
- Titanium Wafers - vacuum melting grade (99.5% Ti Min.)
- Ferrotitanium 70% Grade (66-68% Ti, 3½%-3¾% Al)
- Low Carbon (.10% max.) Ferro 30% Titanium
- Low Carbon (.10% max.) Ferro 40% Titanium
- Low Carbon (.10% max.) Ferro 27-32% Titanium Grade 1
(1½% max. Al)
- Low Carbon (.10% max.) Ferro 27-32% Titanium Grade 2
(2% max. Al)
- Low Carbon (.10% max.) Ferro 27-32% Titanium Grade 3
2½% max. Al)

TUNG STEN

- Tungsten Metal (99.9% W)
- Tungsten Rondelles - Vacuum Melting Grade (99.9% W Min.)
- Tungsten Powder (99.9% Min. W)
- Tungsten Tablets (99.8% Min. W)
- Tungsten Sponge Mix
- Tungsten Chromium (40% W, 60% Cr)

VANADIUM

- Vanadium Aluminum (2½%, 5%, 40%, and 85% V)
- Ferrovanadium

	% Vanadium	% Silicon	% Carbon
Iron Foundry Grade	38-42	7-11	1.00 approx
Open Hearth Grade	50-60	8.0 max.	3.00 max.
Grade "A" Open Hearth	50-55	7.5 max.	2.00 max.
Grade "B" Crucible	55-55	2.25 max.	.50 max.
Grade "B" Crucible	70-80	2.25 max.	.50 max.
Grade "C" Primos	50-55	1.25 max.	.20 max.
Grade "C" Primos	70-80	1.25 max.	.20 max.
Low Silicon Grade	50	1.50 max.	.20 max.
Low Silicon Grade	70	1.50 max.	.20 max.
Thermovan (Exothermic)			

- Vanadium Metal - 90% V Grade
- Vanadium Metal - 90% V Grade (Low Silicon)
- Vanadium Metal - 99.5% Grade

V-5 FOUNDRY ALLOY

(38-42% Cr, 17-19% Si, 8-11% Mn)

ZIRCONIUM

- Zirconium Wafers (99.5% Zr Min.)
- Zirconium Aluminum (about 50-50 ratio)

WELDING & BRAZING

SEAMLESS STEEL
(Continued)

MONEL-NICKEL

3/4

OUNDRY - WELDING
BRAZING PRODUCTS

ALUMINUM WELDING AND BRAZING

Aluminum can be welded and brazed by most of the established processes . . .

Welding

Metal Arc Welding
Oxyacetylene Welding
Inert Gas Welding
 Metal-inert gas (Mig)
 Tungsten-inert gas (Tig)

Brazing

Torch
Furnace
Dip Braze
Induction Heating

A complete line of Alcoa products used in the above processes are available from stock. In addition, we stock Mig and Tig wires in spooled and straight lengths. These wires are of the highest quality, made possible by non-destructive testing of extruded wire electronically. This testing coupled with the most advanced cleaning process in industry produces a wire superior in electrical properties for welding. Mirror finish surfaces, guaranteed chemical composition of alloy, and layer-level winding, make Whitehead's wires the most completely engineered welding wires available.

WELDING AND BRAZING ROD — STANDARD COILS

1100, 4043, 5356, 5556, 718, and 716

Etched or Commercial Finish

Diameter (in inches): $\frac{1}{4}$, $\frac{3}{16}$, $\frac{5}{32}$, $\frac{1}{8}$, $\frac{3}{32}$, $\frac{1}{16}$

WELDING ROD — 36" STRAIGHT LENGTHS

4043, 1100, 1260, 5356, 5554, 142*, 195*, 355*, 356*

Packed in 5 Pound Tubes

Diameter (in inches): $\frac{1}{4}$, $\frac{3}{16}$, $\frac{5}{32}$, $\frac{1}{8}$, $\frac{3}{32}$, $\frac{1}{16}$
*Available in $\frac{1}{4}$ " diameter only

BRAZING ROD — 36" STRAIGHT LENGTHS

718 and 716

Packed in 5 Pound Tubes

Diameter (in inches): $\frac{1}{4}$, $\frac{3}{16}$, $\frac{1}{8}$, $\frac{3}{32}$, $\frac{1}{16}$

ALUMINUM WELDING ELECTRODE

Consumable Electrode for Shielded Inert Gas Metal Arc Welding Pre-cleaned and Level Wound on Non-Returnable Spools for All Position Welding

4043, 1100, 2319, 5154, 5356, 5554, 5556

12½ Pound Spool

Electrode Diameter: $\frac{1}{8}$, $\frac{3}{32}$, $\frac{1}{16}$, $\frac{3}{64}$, .030

1 Pound Spool

Electrode Diameter: $\frac{1}{16}$, $\frac{3}{64}$, .030

WELDING & BRAZING

ALUMINUM

718 ALUMINUM BRAZING FILLER STOCK

MILL Finish

Thickness (in inches)	Size (in inches)
.010	6 x 24
.015	6 x 24

#64 ALUMINUM SOLDER FLUX

(For use with #804 Solder)

Size	Packing
5 LB. JAR	4 PER CASE

66A AND #67 ALUMINUM SOLDER FLUX

(For use with #805 Solder)

Size	Packing
5 LB. JAR	4 PER CASE
50 LB. DRUM	
150 LB. DRUM	

#30 ALUMINUM BRAZING FLUX

Size	Packing
5 LB. JAR	4 PER CASE
50 LB. DRUM	
150 LB. DRUM	

#34 ALUMINUM BRAZING FLUX

Size	Packing
5 LB. JAR	4 PER CASE
50 LB. DRUM	
150 LB. DRUM	

#804 ALUMINUM SOLDER

Low Temperature

Melting Range: 338°F-492°F

Diameter (in inches)	Packing
1/8	1 LB. SPOOL
1/4	36" LENGTHS
1/16	1 LB. SPOOL

#805 ALUMINUM SOLDER

High Temperature

Melting Range: 715°F-725°F

Diameter (in inches)	Packing
1/16	25# COIL OR 36" ST. LGTHS
3/32	25# COIL OR 36" ST. LGTHS
1/8	25# COIL OR 36" ST. LGTHS

#22 ALUMINUM WELDING FLUX

Size	Packing
5 LB. JAR	4 PER CASE
50 LB. DRUM	
150 LB. DRUM	

#33 ALUMINUM BRAZING FLUX

Size	Packing
5 LB. JAR	4 PER CASE
50 LB. DRUM	
150 LB. DRUM	

#53 ALUMINUM BRAZING FLUX

Size	Packing
5 LB. JAR	4 PER CASE
50 LB. DRUM	
150 LB. DRUM	

WELDING & BRAZING

INCO WELDING MATERIALS

All joining processes used widely for steel are applicable with only slight modification necessary in some cases to Monel, Nickel, Inconel, Incoloy, and Ni-O-Nel. Available on request, the following publications describe the correct welding procedures for achieving the best results:

- T-2 "Fusion Welding of Nickel and High Nickel Alloys"
- T-33 "Resistance Welding of Nickel and High Nickel Alloys"
- T-34 "Brazing and Soldering Nickel and High Nickel Alloys"

Inco's electrodes and wires were developed specifically for welding Inco Nickel Alloys, wrought, cast and clad products. The mechanical properties and corrosion resistance of properly made welds in nickel, Monel and Inconel will be equal to or better than the base material.

INCO FLUX COATED ELECTRODES

The following flux-coated electrodes are generally stocked in diameters $\frac{3}{32}$ ", $\frac{1}{8}$ ", $\frac{5}{32}$ ", $\frac{3}{16}$ ", and $\frac{1}{4}$:

Type Number	Recommended For
"130" MONEL ELECTRODE	GENERAL PURPOSE — METAL ARC WELDING OF MONEL, "402" & "403" MONEL AND SOMETIMES "K" MONEL.
"131" NICKEL ELECTRODE	GENERAL PURPOSE — METAL ARC WELDING OF NICKEL AND LOW CARBON NICKEL.
"132" INCONEL ELECTRODE	GENERAL PURPOSE — METAL ARC WELDING OF INCONEL.
"134" "K" MONEL ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING OF "K" MONEL AND OVERLAYING "K" MONEL ON STEEL.
"135" NI-O-NEL ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING OF NI-O-NEL.
"139" INCONEL "X" ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING OF INCONEL "X" AND INCONEL "W".
"140" MONEL ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING CLAD SIDE OF MONEL-CLAD STEEL, OVERLAYING MONEL ON STEEL, JOINING MONEL TO STEEL.
"141" NICKEL ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING CLAD SIDE OF NICKEL-CLAD STEEL, OVERLAYING NICKEL ON STEEL AND JOINING NICKEL TO STEEL.
"142" 80/20 NICKEL CHROMIUM ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING OF THE CLAD SIDE OF INCONEL-CLAD STEEL OR SOMETIMES NICKEL-CLAD STEEL, WELDING 80/20 NICKEL CHROMIUM, JOINING INCONEL TO STEEL.
"180" MONEL ELECTRODE	GENERAL PURPOSE — METAL ARC WELDING OF MONEL "400", "402", "403" OR "404" TO THEMSELVES OR TO EACH OTHER. MAY ALSO BE USED FOR WELDING THESE SAME ALLOYS TO STEEL.
"187" 70/30 COPPER-NICKEL ELECTRODE	SPECIAL PURPOSE — METAL ARC WELDING OF 70/30, 80/20 AND 90/10 CU-NI.

SEAM
STEEL

(Conti

MONEL-NICKEL

INDUSTRY'S WELDING
BRAZING PRODUCTS

COPPER

WELDING & BRAZING

NICKEL & NICKEL ALLOYS

INCO GAS WELDING ROD AND WIRE

The following gas welding rods and wires are generally stocked 36" long in diameters $\frac{1}{16}$ ", $\frac{3}{32}$ ", $\frac{1}{8}$ ", $\frac{5}{32}$ ", $\frac{3}{16}$ ", and $\frac{1}{4}$ ". Spooled wire is stocked in .035", .045", and .062" diameters.

Type Number	Recommended For
"40" MONEL ROD	GENERAL PURPOSE — GAS WELDING MONEL.
"41" NICKEL ROD	GENERAL PURPOSE — GAS WELDING NICKEL.
"42" INCONEL ROD	GENERAL PURPOSE — GAS WELDING INCONEL AND INCOLOY.
"43" MONEL ROD	SPECIAL PURPOSE — GAS WELDING "402" & "403" MONEL FOR ACID PICKLING SERVICE.
"44" "K" MONEL ROD	GENERAL PURPOSE — GAS WELDING "K" MONEL.
"47" 70/30 COPPER-NICKEL FILLER ROD	SPECIAL PURPOSE — GAS WELDING 70/30, 80/20 AND 90/10 CU-NI.
"60" MONEL ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF MONEL-TUNGSTEN AND CONSUMABLE.
"61" NICKEL ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF NICKEL-TUNGSTEN AND CONSUMABLE.
"62" INCONEL ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF INCONEL- AND INCOLOY-TUNGSTEN AND CONSUMABLE.
"64" "K" MONEL ROD AND FILLER "65" WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF "K" MONEL-TUNGSTEN AND CONSUMABLE.
"65" NI-O-NEL ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF NI-O-NEL TUNGSTEN AND CONSUMABLE.
"67" 70/30 COPPER-NICKEL ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF 70/30, 80/20 AND 90/10 CU-NI.
"69" INCONEL "X" ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS METAL ARC WELDING OF INCONEL "X"-TUNGSTEN AND INCONEL "W"-TUNGSTEN AND CONSUMABLE.

Continued on next page.

WELDING & BRAZING

NICKEL & NICKEL ALLOYS

INCO GAS WELDING ROD AND WIRE (Continued)

SEAN
STEEL
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MONEL-NICKEL

CONTINUOUS - WELDING
BRAZING PRODUCTS

"82" INCONEL ROD AND FILLER WIRE	SPECIAL PURPOSE — INERT GAS WELDING OF INCONEL ALLOY "600" TO ITSELF OR TO STAINLESS OR CARBON STEELS, ALSO FOR OVERLAYING ON STEEL.
INCONEL "92" ROD AND FILLER WIRE, FORMER- LY INCO-WELD "A" WIRE	GENERAL PURPOSE — INERT GAS METAL ARC WELDING DISSIMILAR ALLOYS AS: AUSTENITIC AND FERRITIC TO EACH OTHER AND TO HIGH-NICKEL ALLOYS; ALSO FOR WELDING INCOLY.

INCO WELDING FLUXES

Type Number	Recommended For
INCO "1" FLUX	SPECIAL PURPOSE — FLUX FOR GAS WELD- ING COPPER ALLOYS AND FOR HARD FACING "K" MONEL.
INCO "2" FLUX	GENERAL PURPOSE — GAS WELDING AND BRAZING OF INCONEL, STAINLESS STEELS AND OTHER CHROMIUM CONTAINING ALLOYS, — BACKING FLUX FOR INERT GAS METAL ARC WELDING.
INCO "3" FLUX	GENERAL PURPOSE — GAS WELDING AND BRAZING OF MONEL AND OTHER NICKEL- COPPER ALLOYS, — BACKING FLUX FOR INERT GAS METAL ARC WELDING.

WELDING & BRAZING

NICKEL & NICKEL ALLOYS

NI ROD AND NI-ROD "55" WELDING ELECTRODES

Flux Coated

Ni-Rod is used in the metal arc welding of cast iron, joining cast iron to steel, and in joining the ferrous alloys, nickel alloys and some copper alloys. It gives strong, sound, machinable cast iron welds, and is known for its thorough fusion, fine wash, excellent bead contour, and easily removable slag. It seldom requires pre-heat and post-heat, and provides a stable arc in all positions.

Ni-Rod "55" similarly is used in the metal arc welding of cast iron, ductile iron, and Ni-Resist. This rod is particularly useful for heavy sections and high phosphorous irons.

These electrodes are stocked in $\frac{3}{32}$ ", $\frac{1}{8}$ ", $\frac{5}{32}$ ", and $\frac{3}{16}$ ". They can be used with either AC or DC. Descriptive literature is available on request.

NOTE: All coated electrodes on the market are hygroscopic to some degree. Under conditions of high humidity or prolonged storage, it is well to provide additional protection in the form of ovens or drying agents.

INCO-WELD "A" WELDING ELECTRODES

Flux Coated

Inco-Weld "A" is a versatile electrode for use in joining dissimilar metals. In such applications, it gives sound, high quality welds in better than 90% of the cases normally encountered in the fabricating shop. This rod permits production of X-ray quality welds which in most cases is equivalent to or better than either of the alloys being welded. Inco Rod "A" is used successfully in such typical combinations as mild steel and Type 304 stainless, mild steel and Type 347 stainless, Monel and Type 410 stainless, Inconel and Type 405 stainless, and numerous others. It is used on D.C. (Reversed Polarity). A descriptive folder is available on request. The stocked sizes with the recommended amperage ranges are as follows:

Diameter (in inches)	Amps
$\frac{3}{32}$	40-65
$\frac{1}{8}$	75-100
$\frac{5}{32}$	90-130
$\frac{3}{16}$	110-150

WELDING & BRAZING

STAINLESS STEEL WELDING ELECTRODES

Whitehead Rezystal® Stainless Steel Welding Electrodes are available in two basic coatings — DC Lime and AC-DC Titania coatings. Excellent starting characteristics are obtained on all types of AC welding equipment with Whitehead AC-DC stainless electrodes. Arc is stable, smooth, with fine spray weld metal transfer and bead in uniform, flat or slightly concave with straightline feathered edges. Complete penetration and freedom from porosity is assured. Slag is easily and completely removed without secondary film, which means less cleaning, grinding and polishing time. Weld has corrosion resistance equal to that of parent metal with excellent mechanical properties.

SEAN
STEEL
(Con)

MONEL-NICKEL

COPPER

CRUCIBLE WELDING & BRAZING PRODUCTS

Rezystal Grade	AWS-ASTM Classification Number	Typical Weld Deposit Analysis			
TYPE 308	E308	CARBON	.07% MAX.		
		CHROMIUM	19.0%		
		NICKEL	9.5%		
TYPE 308ELC	E308L	CARBON	.04% MAX.		
		CHROMIUM	19.0%		
		NICKEL	9.5%		
TYPE 309	E309	CARBON	.10% MAX.		
		CHROMIUM	23.0%		
		NICKEL	13.0%		
TYPE 309CB	E309CB	CARBON	.10% MAX.		
		CHROMIUM	23.0%		
		NICKEL	13.0%		
		COLUMBIUM	.80%		
TYPE 310	E310	CARBON	.20% MAX.		
		CHROMIUM	26.0%		
		NICKEL	21.0%		
TYPE 310CB	E310CB	CARBON	.12% MAX.		
		CHROMIUM	26.0%		
		NICKEL	21.0%		
		COLUMBIUM	.80%		
TYPE 310MO	E310MO	CARBON	.12% MAX.		
		CHROMIUM	26.0%		
		NICKEL	21.0%		
		MOLYBDENUM	2.0%		
TYPE 312	E312	CARBON	.15% MAX.		
		CHROMIUM	29.0%		
		NICKEL	9.5%		
TYPE 316	E316	CARBON	.07% MAX.		
		CHROMIUM	18.0%		
		NICKEL	13.0%		
		MOLYBDENUM	2.25%		
TYPE 316ELC	E316L	CARBON	.04% MAX.		
		CHROMIUM	18.0%		
		NICKEL	13.0%		
		MOLYBDENUM	2.25%		
TYPE 317	E317	CARBON	.07% MAX.		
		CHROMIUM	19.0%		
		NICKEL	13.0%		
		MOLYBDENUM	3.50%		
TYPE 318	E318	CARBON	.07% MAX.		
		CHROMIUM	18.0%		
		NICKEL	12.0%		
		MOLYBDENUM	2.25%		
		COLUMBIUM	.80%		
TYPE 330	E330	CARBON	.25% MAX.		
		CHROMIUM	15.0%		
		NICKEL	35.0%		
TYPE 347	E347	CARBON	.07% MAX.		
		CHROMIUM	19.0%		
		NICKEL	9.5%		
		COLUMBIUM	.80%		

Whitehead Rezystal Stainless Steel Welding Electrodes are stocked in diameters $\frac{1}{4}$ ", $\frac{3}{16}$ ", $\frac{5}{32}$ ", $\frac{1}{8}$ ", $\frac{3}{32}$ ", $\frac{5}{64}$ " and $\frac{1}{16}$ ".

®Trade Mark Crucible Steel Company

WELDING & BRAZING

INDUSTRIAL PRODUCTS

STAINLESS STEEL WELDING WIRE

Whitehead's Rezystal® stainless steel welding wires and rods are manufactured under a carefully administered, high standard quality control program. Modern equipment designed especially for welding wire production, assures that every form of Whitehead's wire has the characteristics best suited for the process by which it is applied. Temper, cast, helix and surface finish are closely controlled as the chemistry and properties of the wire. Whitehead's Rezystal Gas, Mig, Tig and Submerged arc welding wires conform to government and association specifications and codes.

®Trademark of Crucible Steel Company

STAINLESS STEEL WELDING WIRE

Rezystal Grade	Typical Chemical Analysis			
TYPE 308	CARBON MANGANESE CHROMIUM	0.08% MAX. 1.75% 20.50%	NICKEL SILICON	9.75% 0.40%
TYPE 308ELC	CARBON MANGANESE CHROMIUM	0.03% MAX. 1.75% 20.50%	NICKEL SILICON	9.75% 0.40%
TYPE 309	CARBON MANGANESE CHROMIUM	0.10% MAX. 1.75% 24.25%	NICKEL SILICON	13.50% 0.40%
TYPE 310	CARBON MANGANESE CHROMIUM	0.15% MAX. 1.75% 26.50%	NICKEL SILICON	21.50% 0.40%
TYPE 312	CARBON MANGANESE CHROMIUM	0.10% MAX. 1.75% 30.00%	NICKEL SILICON	8.75% 0.40%
TYPE 316	CARBON MANGANESE CHROMIUM	0.08% MAX. 1.75% 19.00%	NICKEL SILICON MOLYBDENUM	13.25% 0.40% 2.20%
TYPE 316ELC	CARBON MANGANESE CHROMIUM	0.03% MAX. 1.75% 19.00%	NICKEL SILICON MOLYBDENUM	13.25% 0.40% 2.20%
TYPE 347	CARBON MANGANESE CHROMIUM NICKEL	0.08% MAX. 1.75% 20.00% 9.75%	SILICON COLUMBIUM PLUS TANTALUM	0.40% 0.80% 0.80%
TYPE 348	CARBON MANGANESE CHROMIUM NICKEL	0.08% MAX. 1.75% 20.00% 9.75%	SILICON COLUMBIUM TANTALUM	0.40% 0.80% 0.10% MAX.
TYPE 349	CARBON MANGANESE CHROMIUM NICKEL	0.12% MAX. 1.75% 20.00% 8.50%	SILICON MOLYBDENUM COLUMBIUM TUNGSTEN	0.40% 0.50% 1.25% 1.50%
TYPE 410	CARBON MANGANESE CHROMIUM	0.12% MAX. 0.40% 12.50%	NICKEL SILICON	— 0.35%
TYPE 430	CARBON MANGANESE	0.10% MAX. 0.40%	CHROMIUM SILICON	16.50% 0.35%

®Trade Mark Crucible Steel Company

Whitehead Rezystal Stainless Steel Welding Wires are stocked in 36" lengths — in diameters $\frac{1}{16}$ ", $\frac{3}{32}$ ", $\frac{1}{8}$ ", $\frac{5}{32}$ " and $\frac{3}{16}$ ". Spooled wire is available in .035", .045" and .062" diameters.

WEIGHTS

DATA

WELDING & BRAZING

COPPER ALLOYS

Specifying an Anaconda American welding or brazing rod assures consistent high quality performance. Anaconda products are used for welding both deoxidized and electrolytic copper in wrought and cast form. They are also used with silicon copper alloys such as Everdur. These wires and rods are widely used in the welding and surfacing of steel.

SEAM
STEEL
(Con)

MONEL-NICKEL

ANACONDA COPPER 189 WELDING ROD

Diameter (in inches)	Length (in inches)
3/32	36
1/8	36
5/32	36
3/16	36
1/4	36

EVERDUR 658 WELDING ROD

Diameter (in inches)	Length (in inches)
1/16	36
3/32	36
1/8	36
5/32	36
3/16	36
1/4	36

TOBIN BRONZE 470 WELDING ROD

Diameter (in inches)	Length (in inches)
1/8	36
5/32	36
3/16	36
1/4	36

ANACONDA 681 WELDING ROD*

Diameter (in inches)	Length (in inches)
1/16	36
3/32	36
1/8	36
5/32	36
3/16	36
1/4	36

*Low Fuming

PHOSPHOR BRONZE 510 and 524

Diameter (in inches)	Length (in inches)
1/16	36
3/32	36
1/8	36
5/32	36
3/16	36
1/4	36

NICKEL SILVER 773 WELDING ROD

Diameter (in inches)	Length (in inches)
1/16	36
3/32	36
1/8	36
3/16	36
1/4	36

WELDING & BRAZING

INDUSTRIAL PRODUCTS

SILVER BRAZING ALLOYS

Handy & Harman

Easy-Flo Brazing Alloys, Sil-Fos Brazing Alloys and Handy Fluxes products of Handy & Harman, are stocked at all of our warehouses. They are low temperature silver brazing alloys which produce high strength joints and offer many other advantages.

Sil-Fos contains 15% silver and flows freely at 1300° F. It joins non-ferrous metals only — used particularly on copper, brass, and bronze. It is especially effective for joining pipe and tubing, and is widely used on electrical work. Easy-Flo (original alloy) contains 50% silver and flows freely at 1175° F. It joins ferrous and non-ferrous metals, including iron, steel, stainless steel, copper-nickel and chrome-nickel alloys. It is especially effective for joining dissimilar metals.

Easy-Flo 3 is similar to Easy-Flo, also containing 50% silver, but varies slightly in composition and flowing characteristics. It flows freely at 1270°F. Easy-Flo 3 is widely used for brazing cemented carbide tool tips to shanks, for fabricating large copper piping, for applications involving wide tolerances, and where filtering is required.

Easy-Flo 3 Trimetal is an Easy-Flo 3 Coating on each side of a copper shim, in a 50/50 ratio of alloy and copper. Its flow point is 1270°F. Easy-Flo 3 Trimetal is especially suited for applications requiring a "sandwich" type braze, such as big lathe, planer and shaper tools, milling and form cutters, breaches, etc. By preplacing the alloy and copper all in one piece instead of three, much time and labor are saved.

Easy-Flo 45 contains 45% silver and flows freely at 1145° F., the lowest working temperature of any alloy capable of making high strength joints. It joins all ferrous, non-ferrous, and dissimilar metals that melt at temperatures above the working temperature of the alloy. It is extremely fluid at its working temperature,



STRENGTH

Tensile tests prove that properly made Sil-Fos, Easy-Flo, and Easy-Flo 3 brazed joints are stronger than the metals joined.

DUCTILITY

Bend, twist, hammer Sil-Fos, Easy-Flo, or Easy-Flo 3 joints — the silver content gives them the ductility to take it.



WEIGHTS

DATA

WELDING & BRAZING

SILVER BRAZING ALLOYS (Continued)

Handy & Harman

assuring deep penetration and outstanding other alloys two to one. The lower silver content, lower flow point, large covering capacity, fast action and small amount of alloy needed all combine to make possible fast production of strong, liquid and gas-tight joints at new low metal joining costs. In addition, its lower working temperature means increased protection to the metal against warpage and heat damage.

Easy-Flo 35 contains 35% silver and flows freely at 1295° F., the lowest flow point for an alloy having this silver content. It joins all ferrous, non-ferrous and dissimilar metals that melt at temperatures above the working temperature of the alloy. It flows freely at its working temperature and penetrates rapidly, making high strength joints with thin films. The flow point and silver content have been carefully balanced in this alloy. The result is an alloy that brings worthwhile economies to many metal joining jobs — especially those which can be done with a torch and where a temperature of 1295° F. is not objectionable.

Because Sil-Fos, Easy-Flo, Easy-Flo 3, Easy-Flo 3 Tri-metal, Easy-Flo 45, and Easy-Flo 35 contain silver and are extremely fluid at low working temperatures they:

- 1 Reach brazing temperature quickly.
- 2 Penetrate in a flash to every part of a properly fluxed joint.
- 3 Diffuse into metal surfaces and actually alloy with them.
- 4 Require only thin films to make the strongest joints.
- 5 Leave little or no alloy outside a joint, reducing or eliminating finishing.

Because of their complete penetration, alloying action and the thin films required, Sil-Fos and Easy-Flo brazed joints are:



LEAK-TIGHTNESS

Pressure tests prove Sil-Fos, Easy-Flo and Easy-Flo 3 joints are leak-tight. Full penetration and alloying action are the reason.



LOW COST

Thin films make the best joints. Savings in labor, machine work, heating and finishing time combine to give real economy.

WELDING & BRAZING

INDUSTRIAL PRODUCTS

SILVER BRAZING ALLOYS (Continued)

Handy & Harman

- 1 Consistently stronger than the metals joined.
- 2 Liquid and gas-tight.
- 3 Ductile — stand up under vibration, shocks and temperature changes.
- 4 Permanently high in electrical conductivity — they can't loosen up or corrode internally.
- 5 Resistant to a great many corrosive agents.
- 6 As good or better than the metals joined in heat conductivity.

In addition to those described, there are many other alloys and fluxes available for special applications. For information, call our nearest warehouse sales office, or write for Handy & Harman Bulletin 20.

SILVER CONTENTS AND FLOW POINTS IN DEGREES F.

Brazing Alloys	Silver Content	Melting Point °F	Flow Point °F
EASY-FLO	50	1160	1175
EASY-FLO 3	50	1170	1270
EASY-FLO 45	45	1125	1145
EASY-FLO 35	35	1125	1295
SIL-FOS	15	1185	1300
SIL-FOS	5	1185	1300
BRAZE TL	9	1410	1565
BRAZE ATT	20	1140	1500
BRAZE 202	20	1315	1500
BRAZE SS	40	1220	1435
BRAZE 404	40	1220	1580
BRAZE DE	45	1225	1370
BRAZE ETX	50	1250	1425
BRAZE 541	54	1340	1575
BRAZE 560	56	1145	1205
BRAZE 580	57.5	1120	1345
BRAZE 603	60	1115	1225
BRAZE 630	63	1275	1475
BRAZE EASY	65	1240	1325
BRAZE MEDIUM	70	1275	1360
BRAZE BT	72	1435	1435
BRAZE HARD	75	1365	1450
BRAZE IT	80	1340	1490
LITHOBRAZE 846	84.6	1415	1610
LITHOBRAZE 925	92.5	1400	1635
TEC*	5	640	740
TEC-Z*	5	480	600
FOS-FLO	0	1310	1460

*A solder-not a brazing alloy

WEIGHTS

DATA

IA

WELDING & BRAZING

LITHOBRAZE BT LITHOBRAZE 846 LITHOBRAZE 925

For brazing honeycomb
airframe structures

The Lithobraze alloys — BT, 846 and 925 — are special purpose alloys formulated for fluxless atmosphere furnace brazing of stainless steels. They are being widely used for brazing honeycomb airframe structures made of PH15-7 Mo and 17-7PH type stainless steels. The addition of lithium to the silver-copper alloys acts as the wetting agent and renders these alloys self-fluxing when used in a hydrogen or inert atmosphere of low dew point (-70°F). Argon is the most commonly used inert gas. These Lithobraze alloys permit taking advantage of the maximum strength afforded by free node flow.

The use of endogas or exogas atmospheres or standard fluxes is not recommended since they react with the lithium, and interfere with bonding. A minimum brazing temperature of 50°F above the flow point is suggested for atmosphere furnace brazing. These alloys are particularly adaptable to brazing thin sections because solution of the base metal by the filler metal is virtually nil.

Joints made with the Lithobraze alloys are suitable for application where operating temperatures may be intermittently as high as 900°F. Joints made on heat resistant alloys with these filler metals are not subject to interface corrosion.

SIL-FOS & SIL-FOS 5

Sil-Fos is a low temperature brazing alloy containing silver, phosphorous and copper. It flows freely at 1300° F., makes joints between copper, brass and bronze that are stronger than the metals joined. Sil-Fos is sold by the pound at remarkably low cost for an alloy containing silver. Sil-Fos 5 is designed for applications in which the brazing alloy need not contain more than 5% silver. It is economical, and makes exceptionally strong joints. Sil-Fos 5 is available in wire and rod only.

Standard Size	Inches per Avoir. Lb.	Standard Size	Inches per Avoir. Lb.
1/8" SQUARE X 36"	210	3/32" WIRE—COILS	475
.050" X 1/8" X 20"	524	1/16" WIRE—COILS	1082
.050" X 1/16" X 20"	1048	3/64" WIRE—COILS	1900
		1/32" WIRE—COILS	4328

FOS-FLO

Round-Edge, Square Rods

Fos-Flo is a low-temperature, easy-flowing brazing alloy for making strong, leak-proof, corrosion-resistant, self-fluxing joints. It enables material and labor costs to be held to a minimum. Fos-Flo is recommended for use in making all types of joints between copper, bronze, nickel-silver, brass, and other non-ferrous metals — especially medium and heavy-weight parts.

WELDING & BRAZING

HANDY FLUX

Handy Flux is a general purpose flux essential to best results with silver brazing alloys for two reasons:

- 1 It works at a temperature low enough to give the full benefit of the low flow point of these alloys. It starts dissolving oxides at 600°F. — 800°F., and at 1100°F. is entirely liquid and active, dissolving completely all refractory oxides.
- 2 From the standpoint of performing other flux functions there is no better flux made than Handy Flux. It speeds up brazing action. It is an excellent cleaning agent. It washes off readily in hot water after brazing. Its paste form makes it easy to apply with a brush exactly where it is wanted.

Handy-Flux is stocked at all warehouses in $\frac{1}{2}$ -pound, 1-pound, 5-pound jars, and 25-pound and 50-pound metal drums.

Although Handy Flux is the best flux for nearly every metal, under certain conditions special-purpose fluxes are recommended. Such fluxes include:

Handy Flux Type B-1—for brazing high chromium stainless steels, tungsten and chromium carbides and molybdenum alloys.

Handy Flux Type A-1—for brazing aluminum-bronze and other alloys containing small amounts of aluminum and titanium.

Handy Hi-Temp Flux—used where brazing temperatures go into the 1700 to 2000°F range for considerable lengths of time.

For information on Handy Flux or these special purpose fluxes call our nearest warehouse sales office.

RINGS, SHIMS AND SPECIAL SHAPES

For Preplacement Brazing

Replacing the alloy enables you to achieve maximum speed and realize greater economy in Easy-Flo and Sil-Fos brazing. Preplacing gives accurate control of the amount of alloy used per joint, assures a uniform flow of alloy through the joint area, eliminates hand feeding of the alloy — plus offering other advantages.

Easy-Flo and Sil-Fos may be preplaced in any of the following forms:

- 1 Inserts of shim or thin sheet stock cut or stamped to fit joint area.
- 2 Flat washers or disks.
- 3 Rings, or pieces of wire bent to shape.
- 4 Coined washers stamped from wire rings.
- 5 Filings or powder sprinkled on joint surfaces or mixed with flux.
- 6 Alloy sprayed on joint surfaces.
- 7 Surface "tinned" with alloy by dipping or other methods.

To get the complete story on how preplacement may help you, call our nearest warehouse sales office.

WELDING & BRAZING

SEAM
STEEL
(Cont)

MONEL-NICKEL

FOUNDRY • WELDING
BRAZING PRODUCTS

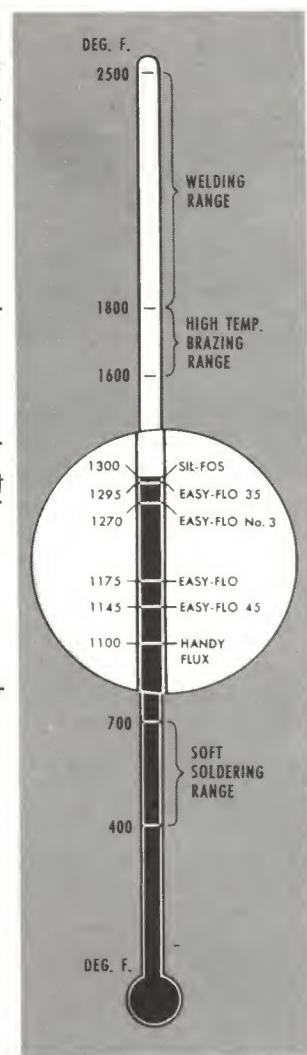
COPPER

EASY-FLO

Standard Size	Inches per Troy Ounce†
3/32" WIRE (COILS)	29
1/16" WIRE (COILS)	66
3/64" WIRE (COILS)	116
1/32" WIRE (COILS)	264
*.020" STRIP (COILS)	10
*.010" STRIP (COILS)	20
*.005" STRIP (COILS)	40
*.003" STRIP (COILS)	67

EASY-FLO 45 & EASY-FLO 35

Standard Size	Inches per Troy Ounce†
3/32" WIRE (COILS)	30
1/16" WIRE (COILS)	68
3/64" WIRE (COILS)	120
1/32" WIRE (COILS)	272
*.020" STRIP (COILS)	10
*.010" STRIP (COILS)	21
*.005" STRIP (COILS)	41
*.003" STRIP (COILS)	69



*In widths of $\frac{1}{4}$ " or more.

†A troy ounce is about 10% heavier than an avoirdupois ounce — that is, one troy ounce equals 1.097 avoirdupois ounces. One avoirdupois pound equals 14.583 troy ounces.

Easy-Flo 3: A special purpose alloy available in the same forms as Easy-Flo, also in octagonal wire for shipyards.

Special Sizes: Standard gauges meet most requirements, but any reasonable gauge wire or strip can be supplied. Also available in: Fine filings and powders from 20 to 200 mesh, washers or rings to specifications. Wire and Strip in special cut lengths.



WHAT DO YOU NEED IN INDUSTRIAL PRODUCTS

Hundreds of metal accessories are available from stock and are supplied by many of the nation's leading mills.

This section of the Metalog lists many of these. A separate catalog is available on fastenings. Get your copy by sending in the handy request form on the next page.

For additional literature, see the following page. For additional information on any metal accessory, call our nearest warehouse sales office.

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MONEL-NICKEL

QUINNORY • WELDING BRAZING PRODUCTS

INDUSTRIAL PRODUCTS

(Con)

COPPER

Stocks change from time to time. If the material you want is not listed here, call or write our office nearest you for additional information.

LITERATURE ON INDUSTRIAL PRODUCTS

Many mill suppliers publish hundreds of free booklets on their products. Just a few of these are listed below. To get literature, call or write our nearest office.

Valve Catalogs

Harper Computer of
Corrosion Resistance

Nu-Rail & Speed-Rail
Slip-On Fittings

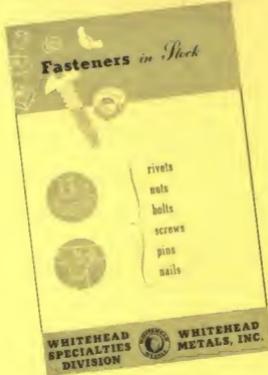
Parker Tube Fitting Catalog

Parker Tube Fitters Manual

Flowline — Stainless Steel
& Aluminum Welding
Fittings and Flanges

TELEPHONES OF OFFICES AND WAREHOUSES:

New York, New York Worth 4-2800
Carteret, N. J. YOrkton 9-2000
Cambridge, Mass. TRowbridge 6-4680
Harrison N. J. HUmboldt 5-5900
Philadelphia, Pa. BAldwin 9-2323
Baltimore, Md. Windsor 4-2000
Buffalo, N. Y. TRiangle 6-3100
Syracuse, N. Y. HOward 3-6241
Windor, Conn. 'phone 688-4921
Rochester, N. Y. BUTler 8-2141



FASTENERS in Stock

Whitehead Metals stocks hundreds of industrial fasteners in a wide variety of shapes, sizes and alloys . . . too numerous to list in this Metalog.

A complete, easy-to-use catalog containing all the necessary information on bolts, screws, nuts, washers, rivets and others, is available to you without charge.

To receive your FREE copy, fill in and mail the postpaid reply card below.

Gentlemen:

Please send me a free copy of your fastenings catalog, "FASTENERS in Stock".

(please print or type)

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____

State _____

FASTENINGS
• FITTINGS

GENERAL

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Do you have
your
copy of

WHITEHEAD'S

Fastening Catalog?
To get it,
fill in the reverse side
of the post card below, and
mail it, today



BUSINESS REPLY MAIL
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WHITEHEAD METALS, INC.
P. O. BOX 346
ST. LOUIS 66, MISSOURI



INDUSTRIAL PRODUCTS

MONEL-NICKEL

COPPER • ALUMINUM
MONEL • WELDING
INDUSTRY PRODUCTS

INDUSTRIAL PRODUCTS

FASTENINGS

Aluminum, Brass,
Copper, Bronze, Monel, Nickel,
Inconel, Stainless Steel, Nylon

• FASTENINGS
• FITTINGS

The mechanical fastenings, listed below, have proved their durability and dependability under the most severe service conditions. When used within the scope of their mechanical and chemical limitations, you can have complete confidence in their performance. Complete details on all sizes and types are available.

Bolts — Machine Bolts, Stove Bolts, Square Neck Carriage Bolts, Oval Neck Connector Bolts, Hanger Bolts

Screws — Machine Screws, Cap Screws, Knurled Brass Screws, Wood Screws, Set Screws, Self-Tapping Screws, Lag Screws (Lag Bolts), Thumb Screws

Nuts — Machine Screw Nuts, Cap Nuts, Wing Nuts, Hexagon Nuts, Castellated Nuts, Knurled Brass Nuts

Washers — Flat Washers, Countersunk Finishing Washers, Lock Washers

Rivets — Rivets, Flat Head Tinners' Rivets

Threaded Brass Rod

Cotter Pins

Escutcheon Pins

Nails — Aluminum Nails, Copper Wire Nails (Diamond Point), Flathead (Monel Wire Nails), Flathead "Anchorfast" (Monel Boat Nails)

GENERAL

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TUBE FITTINGS AND FABRICATING TOOLS

37° Flare
Non-Flare "Bite"
Flareless Grip
Adapters
Welding, Brazing
Tools

Tubing systems joined by Parker fittings incorporate many advantages for lines carrying liquids or gases. Because most tubing has relatively thin walls with high strength values, it is light in weight, compact, and can be readily formed to the contours of machines and equipment. With Parker fittings, fabrication is clean, joints are tight, and maintenance is simple.

Parker fittings are manufactured to exacting specifications for different applications. Catalogs, technical data and additional information are available from our nearest warehouse sales office. When ordering tube fittings, always give the complete part number which includes designations of size, shape and type, and materials. Ordering information is provided in every Parker tube fittings catalog. Get your FREE copy from us, today.

The following tube fittings are available:

Triple-lok 3-piece Flare Tube Fittings
Ferulok Flareless Tube Fittings
Intru-lok Flareless Tube Fittings
Ridg-lok Compression Tube Fittings
Adapter Fittings
Weld-lok Socket Type Tube Fittings
Braze-lok Socket Type Tube Fittings
Hoze-lok Fittings and Hose

FABRICATING TOOLS

Tube Cutters
Flaring Tools
Tube Benders

INDUSTRIAL PRODUCTS

PIPE FITTINGS

Screwed Pipe Fittings
Socket Weld Pipe Fittings
Flange Pipe Fittings
Flanges
Rack and Handrail Fittings

Pipe, rack and handrail fittings are selected and stocked by us to meet your most exacting requirements. High quality materials and workmanship plus superior engineering performance guide us in our choice and assure you of receiving dependable performance in all your piping jobs.

Catalogs and technical literature are yours free of charge. For more information, call or write our office nearest you.

WELDING FITTINGS

FLOWLINE FITTINGS

Aluminum,
Stainless Steel,
Monel, Nickel

An extensive line of Flowline weld fittings are carried in stock for you. These quality fittings are cold formed by an exclusive Flowline Corporation process which produces a smooth, corrosion-resisting surface. Castings are not used in the manufacture of Flowline fittings; they are made from forged or wrought alloys to eliminate porosity. Ends are machined, not ground, to prevent grit inclusions, which are sources of welding troubles.

90° Elbows	Straight and Reducing Outlet Crosses
45° Elbows	Concentric and Eccentric Reducers
180° Returns	Caps
45° Laterals	Straight and Reducing Outlet Tees
Stub Ends	Flanges

Our representatives are well qualified to assist you in solving your corrosion-resistant piping and fitting problems. Call or write for information.

VALVES

Aluminum
Stainless Steel
Monel, Nickel
Plastic

The valves stocked by our warehouses are selected for their superiority in engineering design . . . the high quality of their materials . . . and the precision with which they have been machined.

No matter what your control problem may be, it can be solved with one or more of the many types of valves offered.

Remember that no one alloy or series of alloys can be safely specified unless the exact working conditions have been given careful consideration.

If you want assistance with your specific valve or piping problems, make a date with our representative.

Some of the valves supplied are listed below.

Ball, Gate, Globe and Angle, "Y", Check, Drain Cocks, Needle, Plug, Relief, Two-way, Three-way, Shut-Off, Globe Needle, Angle, Pet Cocks.

INDUSTRIAL PRODUCTS

THREAD LUBRICANTS*

PARKER THREAD SEALERS AND VALVE LUBES

Item	Application	Packaging
UNIPAR	GENERAL-PURPOSE ANTI-SIEZE AND SEALING COMPOUND	1/2 PINT CAN
SEALUBE	ANTI-SIEZE FOR FUEL OR OIL SYSTEM PARTS OF ALUMINUM	1 POUND CAN
THREADLUBE	ANTI-SIEZE FOR ALUMINUM, BRASS AND STEEL THREADS	1 POUND CAN
FERULUBE	TO PREVENT GALLING OF THREADED PARTS, AND EASE WRENCH TORQUE	1/2 POUND TUBE 1 POUND CAN
FUELUBE	VALVE LUBRICANT FOR OIL OR GASOLINE SERVICE	1 POUND CAN

*Alcoa Thread Lubricant — Stocked in 8 oz. Jars

WIRE ROPE

Non-Corrosive Wire Ropes

These wire ropes are manufactured in several sizes and constructions to meet varied service requirements. They are used a great deal for operating, hoisting, and control ropes in the marine, canning, textile, refining and chemical industries.

Non-Corrosive wire ropes give longer, safer service where corrosion would destroy standard carbon steel rope. There are Stainless Steel, Monel, and Phosphor Bronze ropes.

Please get in touch with our office for recommendations and prices

INDUSTRIAL WIRE CLOTH

SPECIFICATIONS

A complete line of industrial wire cloth in all standard sizes of mesh and in all common weaves. Special sizes and weaves available. Wire cloth up to 200 mesh is supplied in standard 100-foot lengths, in widths of 24", 30", 36", 42" and 48". Special cut lengths and widths supplied from mill to specification.

METALS AND ALLOYS

Industrial wire cloth is available in Aluminum, Brass and Copper, Phosphor Bronze, Monel, Nickel, Inconel, Nickel-Chromium. Stainless Steel, Iron and Galvanized, Tungsten, Molybdenum and special alloys.

GRIPPER SLINGS

Gripper Slings are made from woven wire, and are available in three standard specifications for heavy duty, general use, or light duty. Any metal or alloy may be used in the manufacture of Gripper Slings and are available on special order. Monel or stainless steels are recommended if corrosion or heat conditions are to be encountered. Special Neoprene and Clear PVC plastic covered Gripper Slings are also available for extreme delicate handling of smooth or polished loads.

All Gripper Sling handles are heat treated for extra strength, and each set can be rigged in either a basket or choke hitch.

Gripper Slings have unlimited uses in general material handling, or as a production tool in processing or assembly jobs. Use them with any crane, portable or stationary hoist.

Call our office nearest you for additional information, prices and delivery.

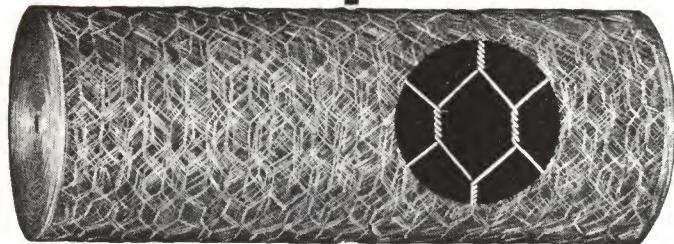
GENERAL

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INDUSTRIAL PRODUCTS



INSULATION NETTING

Monel and Stainless Steel

This insulation netting comes in standard rolls of 48" x 300', covering 1200 square feet. Its packaged weight is approximately 86 pounds. The wire is .028" diameter, in 1" Hex netting. It is also available from the mill in cut lengths.

METALLIC CAULKING COMPOUND

Alumilastic

Alumilastic is an aluminum-base, elastic compound designed for sealing any joint or connection that must be made absolutely water-tight and weatherproof. It is widely used in the Automotive, Railroad and Car Building, Marine, Aircraft and Building Industries.

Alumilastic is available in 7 standard consistencies, ranging from brushing to putty, and is packaged as follows:

Containers

50/55 gal. drums

5 gal. pails

1 gal. can..... 4 per case

½ gal. can..... 18 per case

⅓ gal. can..... 32 per case

1/16 gal. can..... 60 per case

Standard Packaging

Cartridges

2" x 8½" Plastic Spouted..... 14½ oz.

2" x 8" Plain Unspouted..... 6 oz.

2" x 10" Plain Unspouted..... 3½ oz.

Collapsible Aluminum Tubes

Cartridges are available in "C" Consistency only. PLAIN CARTRIDGES are used with standard barrel-type caulking guns, SPOUTED CARTRODGES with cradle-type guns. When cartridges are required, please do not order tubes.

For information concerning your specific application, call our nearest warehouse sales office.

COPPER

STAINLESS STEEL

INDUSTRIAL PRODUCTS

COMMERCIAL WELDING
GRAZING PRODUCTS

INDUSTRIAL PRODUCTS

SHIM STOCK

Laminated Shim Co., Inc.
Brass and Steel Shim Stock
6" x 100" Rolls in Cartons

Thickness (in inches)	Pounds per Roll		Thickness (in inches)	Pounds per Roll	
	Brass	Steel		Brass	Steel
.001	.35	.35	.006	1.32	1.21
.0015	.46	.46	.007	1.53	1.40
.002	.54	.54	.008	1.69	1.58
.003	.73	.73	.009	1.89	1.79
.004	.93	.88	.010	2.25	2.18
.005	1.11	1.07			

SHIM STOCK

Brass and Steel Shim Stock
Two, 6" x 25" Sheets
Flat in Envelopes

Thickness (in inches)	Pounds in Envelope	
	Brass	Steel
.012	1.3	1.2
.015	1.7	1.3
.020	1.9	1.8
.025	2.4	2.2
.032	3.0	2.8

OTHER SHIM STOCK

Shim Stock, in .002 and .003 Laminated Brass, is available in overall thicknesses from .006" to $\frac{1}{8}$ ", in flat sheets in sizes 8" x 8", 8" x 12", 8" x 24", 8" x 36", 8" x 48". In addition, kits are available that contain several rolls of shim stock in various thicknesses. Call our nearest warehouse sales office for additional information.

CLAD PLATE

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INDUSTRIAL PRODUCTS

CLAD STEEL PLATES

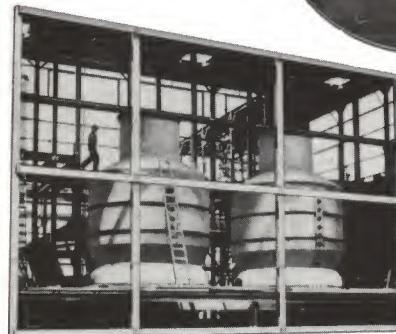
Nickel, Inconel, and
Monel-Clad Steels
Stainless-Clad Steels
Economy in Heavy Construction

Nickel-Clad, Inconel-Clad, and Monel-Clad Steels are products of Lukens Steel Company, Coatesville, Pa., developed for heavy processing and transportation equipment, where they afford the benefits of pure Nickel, Inconel or Monel at low cost.

These bi-metals consist of a cladding layer of Nickel, Inconel, or Monel permanently bonded by hot rolling to a heavier base plate of steel. They are so produced that no separation of the layers occurs under any normal condition of temperature change, pressure, vacuum or mechanical shock and they can be bent, formed or welded without danger of buckling or peeling.

All of these clad materials are available in a wide range of sizes, in thicknesses from $\frac{3}{16}$ inches up, with cladding normally 10% to 20% of the total plate thickness. Other percentages up to 50% are also available.

A large Inconel-Clad Paper Mill Digester. The superior corrosion resistance of Inconel-Clad Digesters enable them to give years of trouble-free service.



Nickel-Clad Collandria pans used in sugar refineries to combat corrosive effects of acid wash liquids.

INDUSTRIAL PRODUCTS

CLAD PLATES (Continued)

**Monel-Clad — Inconel-Clad —
Nickel-Clad — Stainless-Clad**

These are commercial economical corrosion-resistant bi-metals with a surface of alloy sheet and a base of steel plate hot rolled together, making a perfect bond.

The alloy normally constitutes from 10% to 20% of the total thickness of the plate.

		Width in Inches																					
		Length in Inches																					
		Sheared and Flame-Cut Plate Sizes of Lukens Nickel-Clad and Stainless-Clad Steels																					
Diameter of Circle		48	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144	150	156	162	168	174	178
$3\frac{1}{16}$		480	480	480	480	480	480	440	410	385	365	345	330	315	300	260	220	180	150	150	150	150	162
$\frac{1}{4}$		480	480	480	480	480	480	440	410	385	365	345	330	315	300	260	220	180	150	150	150	150	162
$5\frac{1}{16}$		480	480	480	480	480	480	480	480	480	480	470	450	430	410	390	370	360	360	360	360	360	162
$\frac{3}{8}$		480	480	480	480	480	480	480	480	480	480	480	470	460	440	420	400	380	370	325	310	310	310
$7\frac{1}{16}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$\frac{1}{2}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$9\frac{1}{16}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$\frac{5}{8}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$1\frac{1}{16}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$\frac{3}{4}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$1\frac{7}{8}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
1		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$1\frac{1}{4}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$1\frac{1}{2}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
$1\frac{3}{4}$		480	480	480	480	480	480	480	480	480	480	480	480	480	480	480	470	460	450	440	430	420	410
2		480	480	480	480	470	435	405	380	360	340	320	303	290	275	265	255	240	235	225	195	180	178

MONEL-NICKEL

INDUSTRIAL PRODUCTS

INDUSTRIAL PRODUCT

CLAD PLATES
(Continued)

Theoretical
Plate
Weights
Per
Square Foot

Thickness (in inches)	Chromium Nickel Stainless-Clad		Straight Chromium-Clad		Nickel-Clad		Inconel-Clad		Monel-Clad	
	10%	20%	10%	20%	10%	20%	10%	20%	10%	20%
3/16	7.67	7.70	7.66	7.67	7.75	7.85	7.71	7.78	7.75	7.84
1/4	10.23	10.26	10.21	10.22	10.34	10.47	10.29	10.37	10.33	10.46
5/16	12.79	12.83	12.76	12.78	12.92	13.09	12.86	12.96	12.91	13.07
3/8	15.35	15.39	15.32	15.33	15.50	15.71	15.43	15.56	15.49	15.69
7/16	17.90	17.96	17.87	17.89	18.09	18.32	18.00	18.15	18.07	18.30
1/2	20.46	20.52	20.42	20.44	20.67	20.94	20.57	20.74	20.66	20.92
9/16	23.02	23.09	22.97	23.00	23.25	23.56	23.14	23.33	23.24	23.53
5/8	25.58	25.65	25.53	25.55	25.84	26.18	25.71	25.93	25.82	26.14
11/16	28.13	28.22	28.08	28.11	28.42	28.79	28.28	28.52	28.40	28.76
3/4	30.69	30.78	30.63	30.66	31.00	31.41	30.86	31.11	30.98	31.37
7/8	35.81	35.91	35.74	35.77	36.17	36.65	36.00	36.30	36.15	36.60
1	40.92	41.04	40.84	40.88	41.34	41.88	41.14	41.48	41.31	41.83
1 1/2	61.38	61.56	61.26	61.32	62.01	62.82	61.71	62.22	61.97	62.75
2	81.84	82.08	81.68	81.76	82.68	83.76	82.28	82.96	82.62	83.66

See note at beginning of "Permissible Variations" table on next page.

INDUSTRIAL PRODUCTS

CLAD PLATES (Continued)

Permissible Variations

Note: To the nominal weights per square foot shown on the preceding page, must be added the percentage of allowable overweight according to width and thickness of plates which, in accordance with Manufacturers' Standard Practice, is given in the table below:

THICKNESS AND WEIGHT — When ordered to Thickness

Plates 2" and Under in Thickness.

Excess in Average Weight of Lots for Widths given in inches, expressed in percentage of Nominal Weight.

W I D T H S

Specified Thickness (in inches)	48" and under	48" excl. to 60"	60" to 72"	72" to 84"	84" to 96"	96" to 108"	108" to 120"	120" to 132"	132" to 144"	144" to 168"	168" and over
3/16 TO 1/4, EXCL.	7.00	8.00	9.00	10.00	12.00	14.00	16.00	18.00	21.00	—	—
1/4 TO 5/16, EXCL.	6.00	7.00	8.00	9.00	10.00	12.00	14.00	16.00	19.00	—	—
5/16 TO 3/8, EXCL.	5.00	6.00	7.00	8.00	9.00	10.00	12.00	14.00	17.00	18.00	—
3/8 TO 7/16, EXCL.	4.50	5.00	6.00	7.00	8.00	9.00	10.00	12.00	15.00	16.00	18.00
7/16 TO 1/2, EXCL.	4.00	4.50	5.00	6.00	7.00	8.00	9.00	10.00	13.00	14.00	16.00
1/2 TO 5/8, EXCL.	4.00	4.50	5.00	6.00	7.00	8.00	9.00	11.00	12.00	14.00	14.00
5/8 TO 3/4, EXCL.	4.00	4.00	4.50	5.00	6.00	7.00	8.00	9.00	10.00	12.00	12.00
3/4 TO 1, EXCL.	3.50	4.00	4.00	4.50	5.00	6.00	7.00	8.00	9.00	11.00	11.00
1 TO 1 1/2, EXCL.	3.50	3.50	4.00	4.00	4.00	4.50	5.00	6.00	7.00	8.00	9.00
1 1/2 TO 2, (INCL.)	3.50	3.50	4.00	4.00	4.00	4.50	5.00	6.00	7.00	8.00	9.00

Standard Variation under specified thickness, .01 inch.

Standard Variations in Overweight for circular and sketch plates are 25% greater than amounts shown above.

Standard Variations in Overweight for single plates are 1 1/3 times the amounts indicated above. The term "lot" means all plates of each tabular width and thickness gauge represented in each shipment.

WEIGHTS

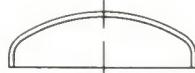
DATA

INDUSTRIAL PRODUCTS

CLAD STEEL FORMED HEADS



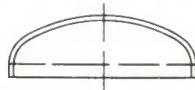
Standard Flanged and Dished Head



"Code" Flanged and Dished Head



Flanged Only Head



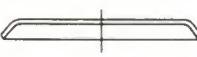
Elliptical Dished Head



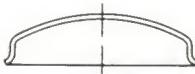
Reverse Dished Head



Dished Only Head



Flanged Head with
Toed Out Flange



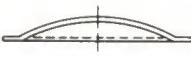
Flanged and Dished, Bellied Head



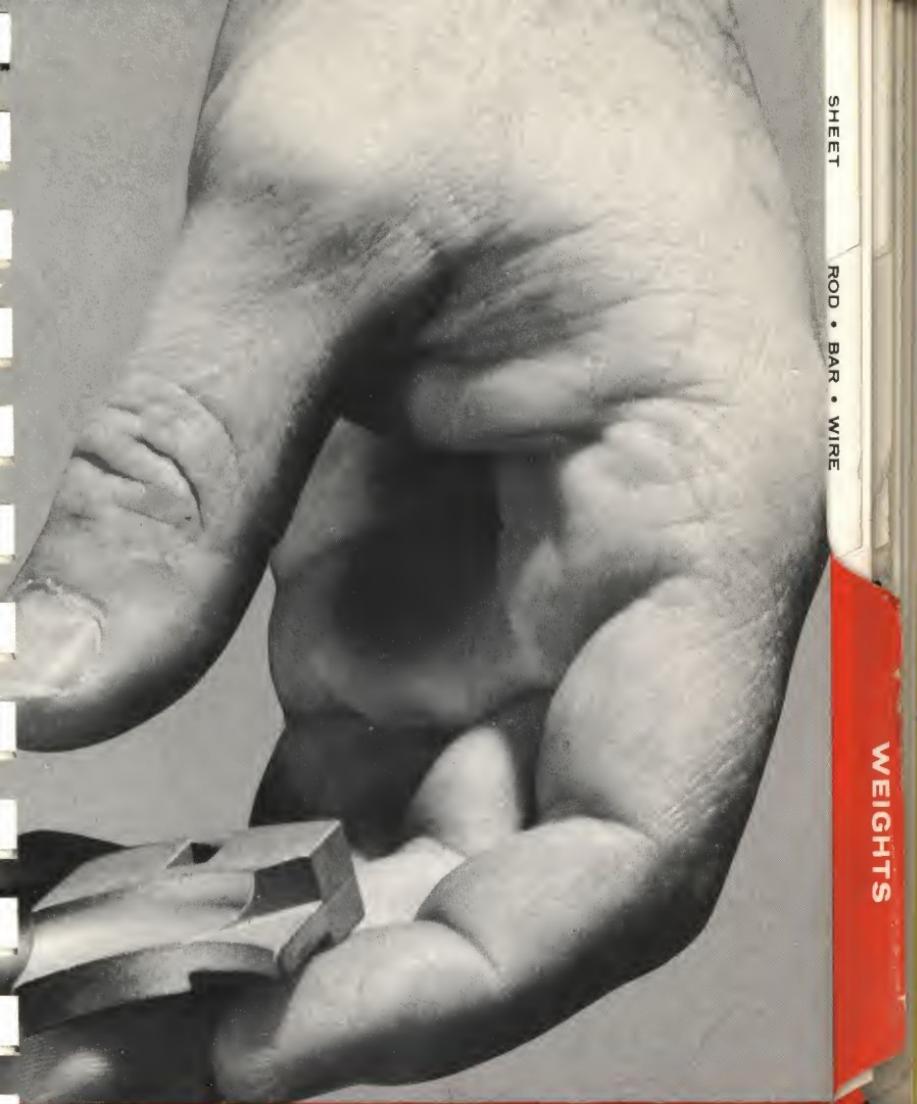
Flanged Only and Bellied Head



Flanged Head with Toed in Flange



Flared Dished Head



SHEET

ROD • BAR • WIRE

WEIGHTS

DATA

HOW MUCH DOES IT **WEIGH**

This section is designed to give you information on weights not found in other parts of the catalog. The tables on the following pages contain weights that are commonly used. If the information you want is not listed here, please contact our nearest warehouse sales office. We will be happy to help you get the data you need.

WEIGHTS

INDUSTRIAL PRODUCTS

COPPER WELDING BRAZING PRODUCTS

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THEORETICAL WEIGHTS

The weights shown in this section, and throughout the rest of the Metalog, have been carefully compiled and checked and are assumed to be theoretically correct. Their exactness cannot be guaranteed, however, since variations must be expected in actual practice.

Please be sure to get in touch with our nearest warehouse sales office if you have any questions on weights. We will do our best to be helpful.

ORDER BY DECIMALS

For accuracy in filling orders we strongly recommend the use of decimal parts of an inch rather than gauge numbers to indicate thickness.

TELEPHONES OF OFFICES AND WAREHOUSES

New York, New York	WOrth 4-2800
Carteret, N. J.	YOrktown 9-2000
Cambridge, Mass.	TRowbridge 6-4680
Harrison N. J.	HUmboldt 5-5900
Philadelphia, Pa.	BAldwyn 9-2323
Baltimore, Md.	WIndsor 4-2000
Buffalo, N. Y.	TRiangle 6-3100
Syracuse, N. Y.	HOWard 3-6241
Windsor, Conn.	'phone 688-4921
Rochester, N. Y.	BUTler 8-2141

WEIGHTS

COMPARATIVE WEIGHTS OF SHEETS

In Pounds per Square Foot

Gauge Number	B. & S. GAUGE (Rounded off at 4 decimals)				U. S. S. GAUGE (Carried out to 4 decimals)		
	Decimal Equivalent in Inches	1100 Aluminum	Brass	Copper	Decimal Equivalent in Inches	Monel	Stainless Steel 18-8
40	.0031	.0437	.1366	.1437	.....	.....	.....
39	.0035	.0494	.1542	.1623	.....	.....	.....
38	.0040	.0564	.1763	.1855	.0062	.2903	.2646
37	.0045	.0635	.1983	.2087	.0066	.3087	.2814
36	.0050	.0706	.2203	.2318	.0070	.3226	.2940
35	.0056	.0790	.2468	.2597	.0078	.3594	.3276
34	.0063	.088	.2776	.2921	.0085	.3963	.3612
33	.0071	.099	.3129	.3292	.0093	.433	.395
32	.0080	.112	.3525	.3709	.0101	.470	.427
31	.0089	.124	.3922	.4127	.0109	.502	.459
30	.0100	.140	.4406	.4637	.0125	.576	.525
29	.0113	.158	.4979	.5240	.0140	.650	.591
28	.0126	.176	.5552	.5842	.0156	.719	.656
27	.0142	.198	.6257	.6584	.0171	.793	.722
26	.0159	.222	.7006	.7373	.0187	.827	.788
25	.0179	.250	.7887	.8300	.0218	.965	.919
24	.0201	.280	.8857	.9320	.0250	1.148	1.05
23	.0226	.315	.9958	1.048	.0281	1.286	1.18
22	.0254	.353	1.115	1.173	.0312	1.424	1.31
21	.0285	.398	1.256	1.321	.0343	1.562	1.44
20	.0320	.447	1.410	1.484	.0375	1.700	1.58
19	.0359	.501	1.582	1.665	.0437	1.975	1.84
18	.0403	.563	1.776	1.869	.0500	2.297	2.10
17	.0453	.632	1.996	2.100	.0562	2.572	2.37
16	.0508	.717	2.238	2.355	.0625	2.848	2.63
15	.0571	.806	2.516	2.648	.0703	3.216	2.95
14	.0641	.905	2.825	2.972	.0781	3.583	3.28
13	.0720	1.016	3.173	3.338	.0937	4.272	3.94
12	.0808	1.14	3.560	3.747	.1093	5.007	4.59
11	.0907	1.279	3.997	4.206	.1250	5.742	5.25
10	.1019	1.437	4.490	4.725	.1406	6.431	5.91
9	.1144	1.612	5.041	5.304	.1562	7.166	6.57
8	.1285	1.813	5.662	5.958	.1718	7.855	7.22
7	.1443	2.036	6.358	6.691	.1875	8.590	7.985
6	.1620	2.286	7.138	7.512	.2031	9.325	8.650
5	.1819	2.567	8.015	8.434	.2187	10.01	9.315
4	.2043	2.883	9.002	9.473	.2343	10.75	9.981
3	.2294	3.237	10.11	10.64	.2500	11.48	10.646
2	.2576	3.635	11.35	11.94	.2656	12.24	11.310
1	.2893	4.083	12.75	13.41	.2812	12.96	11.977

For weights of other metals use Conversion Factors on pages 250 and 251
For close decimal comparison of gauge thicknesses, see table at back of
Data Section.

SHEET

ROD • BAR • WIRE

TUBING • PIPE

CONVERSION FACTORS

MONEL-NICKEL

DATA

IA

WEIGHTS

WEIGHTS PER LINEAL
FOOT OF BRASS SHEET
AND STRIP

		Width in Inches — Pounds per Lineal Foot												
B. & S. Gauge	Decimal	1/16"	3/32"	1/8"	5/32"	3/16"	7/32"	1/4"	5/16"	3/8"	1/2"	5/8"	7/8"	3/4"
1	.2893	.0663	.0995	.1326	.1658	.1989	.2327	.2652	.3315	.3991	.5317	.6643	.7969	
2	.2576	.0590	.0885	.1180	.1476	.1771	.2071	.2361	.2951	.3553	.4733	.5913	.7094	
3	.2294	.0526	.0789	.1051	.1314	.1577	.1845	.2103	.2929	.3164	.4216	.5267	.6319	
4	.2043	.0468	.0702	.0936	.1170	.1404	.1643	.1872	.2341	.2818	.3754	.4690	.5626	
5	.1819	.0417	.0625	.0834	.1042	.1250	.1463	.1667	.2084	.2509	.3342	.4176	.5009	
6	.1620	.0371	.05568	.0746	.0929	.1115	.1306	.1487	.1859	.2231	.2974	.3718	.4461	
7	.1443	.03306	.04959	.0663	.0828	.09935	.1160	.1325	.1656	.1987	.2649	.3312	.3974	
8	.1285	.02944	.04416	.0589	.07375	.08847	.1032	.1180	.1475	.1769	.2359	.2949	.3539	
9	.1144	.02621	.03932	.0525	.06565	.07876	.0919	.1050	.1313	.1575	.2100	.2625	.3151	
10	.1019	.02334	.03502	.0468	.05845	.07016	.0822	.09354	.1169	.1403	.1871	.2339	.2806	
11	.0907	.02078	.03118	.0416	.0520	.06245	.0733	.08326	.1041	.1249	.1665	.2082	.2498	
12	.0808	.01851	.02777	.03709	.04636	.05563	.0653	.07417	.09272	.1113	.1483	.1854	.2225	
13	.0720	.0165	.02475	.03305	.04131	.04957	.0580	.06610	.08262	.0991	.1322	.1652	.1983	
14	.0641	.01469	.02204	.02942	.03678	.04413	.0516	.05884	.07355	.0883	.1177	.1471	.1765	
15	.0571	.01308	.01970	.02621	.03276	.03931	.0459	.05242	.06552	.0786	.1048	.1310	.1573	
16	.0508	.01164	.01746	.02332	.02935	.03498	.0411	.04663	.05829	.0700	.0933	.1166	.1399	
17	.0453	.01038	.01557	.02079	.02599	.03119	.0363	.04159	.05198	.0624	.0832	.1040	.1248	
18	.0403	.00924	.01385	.01850	.02312	.02775	.0325	.0370	.04624	.0555	.0740	.0925	.1110	
19	.0359	.00823	.01234	.01648	.0206	.02472	.02893	.03296	.0412	.0494	.0659	.0824	.0988	
20	.0320	.00733	.01100	.01469	.01836	.02203	.02579	.02933	.03672	.0441	.0588	.0734	.0881	

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

WEIGHTS PER LINEAL FOOT OF BRASS SHEET AND STRIP (Continued)

Thickness	B. & S. Gauge	Width in Inches — Pounds per Lineal Foot										
		1/16"	3/32"	1/8"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
.21	.0285	.00656	.00984	.01312	.01641	.01969	.02297	.02625	.03284	.0394	.0525	.0656
.22	.0254	.00583	.00874	.01165	.01456	.01748	.02039	.02330	.02913	.0350	.0466	.0583
.23	.0226	.00520	.00781	.01041	.01301	.01561	.01821	.02081	.02602	.0312	.0416	.0520
.24	.0201	.00463	.00694	.00926	.01157	.01388	.01620	.01851	.02314	.02777	.0370	.0463
.25	.0179	.00412	.00618	.00824	.01030	.01236	.01443	.01649	.02061	.02473	.0330	.0412
.26	.0159	.00366	.00549	.00732	.00915	.01098	.01281	.01464	.01830	.02197	.02929	.0366
.27	.0142	.00327	.00490	.00654	.00817	.00981	.01144	.01308	.01635	.01962	.02616	.0327
.28	.0126	.002898	.00435	.00580	.00725	.00870	.01015	.01160	.01451	.01741	.02321	.02901
.29	.0113	.002596	.00390	.00520	.00650	.00781	.00911	.01041	.01301	.01561	.02081	.02602
.30	.0100	.002303	.00345	.00461	.00576	.00691	.00806	.00921	.01153	.01381	.01842	.02303
.31	.0089	.002049	.00307	.00410	.00512	.00615	.00717	.00820	.01025	.01230	.01639	.02049
.32	.0080	.001842	.002763	.00368	.00461	.00553	.00644	.00737	.00921	.01105	.01474	.01842
.33	.0071	.001635	.002452	.00327	.00409	.00490	.00572	.00654	.00817	.00981	.01308	.01635
.34	.0063	.001451	.002176	.002901	.00363	.00435	.00508	.00580	.00725	.00870	.01160	.01451
.35	.0056	.001289	.001934	.002579	.00322	.00387	.00451	.00516	.00645	.00774	.01032	.01290
.36	.0050	.001151	.001727	.002303	.002879	.00345	.00403	.00461	.00576	.00691	.00921	.01151
.37	.0045	.001036	.001554	.002072	.002590	.00311	.00363	.00415	.00518	.00622	.00829	.01036
.38	.0040	.000921	.001382	.001842	.002303	.002763	.00322	.00368	.00461	.00553	.00737	.00921
.39	.0035	.000806	.001209	.001612	.002015	.002418	.002821	.00322	.00403	.00484	.00645	.00806
.40	.0031	.000714	.001071	.001428	.001784	.002141	.002498	.002855	.00357	.00428	.00571	.00714

For weights of other metals use Conversion Factors on pages 250 and 251

ROD • BAR • WIRE

STAINLESS STEEL

TUBING • PIPE

WIRE

CONVERSION FACTORS

DATA

**WEIGHTS PER LINEAL
FOOT OF BRASS SHEET
AND STRIP (Continued)**

Thickness	Width in Inches — Pounds per Lineal Foot												
	B. & S. Gauge	Decimal	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"
1	.2893	1.065	2.129	3.19	4.26	5.32	6.39	7.45	8.52	9.58	10.65	11.71	12.75
2	.2576	.950	1.901	2.851	3.80	4.75	5.70	6.65	7.60	8.55	9.50	10.45	11.35
3	.2294	.885	1.770	2.655	3.54	4.42	5.31	6.19	7.08	7.96	8.85	9.73	10.11
4	.2043	.788	1.577	2.365	3.15	3.94	4.73	5.52	6.31	7.09	7.88	8.67	9.003
5	.1819	.670	1.353	2.029	2.712	3.38	4.06	4.74	5.41	6.09	6.70	7.37	8.017
6	.1620	.5949	1.190	1.790	2.387	2.984	3.58	4.18	4.77	5.37	5.97	6.564	7.139
7	.1443	.5299	1.060	1.591	2.122	2.652	3.18	3.71	4.24	4.77	5.30	5.832	6.358
8	.1285	.4719	.9437	1.415	1.886	2.358	2.829	3.30	3.77	4.24	4.72	5.187	5.662
9	.1144	.4201	.8402	1.260	1.680	2.100	2.520	2.940	3.56	3.78	4.20	4.620	5.042
10	.1019	.3742	.7484	1.127	1.503	1.879	2.255	2.603	3.01	3.38	3.76	4.134	4.490
11	.0907	.3331	.6661	1.005	1.341	1.676	2.011	2.347	2.682	3.02	3.35	3.687	3.998
12	.0808	.2967	.5934	.895	1.194	1.492	1.790	2.089	2.387	2.686	2.984	3.282	3.561
13	.0720	.2644	.5288	.796	1.061	1.326	1.591	1.857	2.122	2.387	2.652	2.917	3.171
14	.0641	.2354	.4708	.707	9.43	1.179	1.415	1.650	1.886	2.122	2.358	2.594	2.824
15	.0571	.2097	.4193	.630	.840	1.050	1.260	1.470	1.680	1.890	2.100	2.310	2.515
16	.0508	.1865	.3731	.564	.752	.939	1.127	1.315	1.503	1.691	1.879	2.066	2.239
17	.0453	.1663	.3327	.497	.663	.829	.995	1.160	1.326	1.492	1.658	1.824	1.994
18	.0403	.1480	.2960	.445	.594	.742	.891	1.039	1.188	1.336	1.485	1.633	1.776
19	.0359	.1318	.2636	.397	.529	.661	.794	.926	1.058	1.190	1.323	1.455	1.582
20	.0320	.1175	.2350	.354	.472	.589	.707	.825	.943	1.061	1.179	1.296	1.408

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

WEIGHTS PER LINEAL FOOT OF BRASS SHEET AND STRIP (Continued)

Thickness	Width in Inches — Pounds per Lineal Foot												
	B. & S. Gauge	Decimal	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"
.21	.0285	.1050	.2100	.3115	.420	.525	.630	.735	.840	.945	1.050	1.155	1.254
.22	.0254	.0932	.1864	.2796	.373	.466	.559	.652	.746	.839	.932	1.025	1.117
.23	.0226	.0833	.1665	.2498	.333	.416	.500	.583	.666	.749	.833	.916	.9946
.24	.0201	.0740	.1481	.2221	.2962	.370	.444	.518	.592	.666	.740	.814	.8857
.25	.0179	.0659	.1319	.1978	.2638	.330	.396	.462	.528	.593	.659	.725	.7887
.26	.0159	.0586	.1172	.1757	.2343	.2929	.351	.410	.469	.527	.586	.6439	.7024
.27	.0142	.0513	.1026	.1540	.2053	.2566	.308	.359	.411	.462	.513	.5646	.6255
.28	.0126	.0464	.0928	.1393	.1857	.2321	.2785	.325	.371	.418	.464	.5106	.5570
.29	.0113	.0416	.0833	.1249	.1665	.2081	.2498	.2914	.333	.375	.416	.4579	.4961
.30	.0100	.0368	.0737	.1105	.1474	.1842	.2210	.2579	.2947	.332	.368	.4048	.4417
.31	.0089	.0328	.0656	.0984	.1312	.1639	.1957	.2295	.2623	.2951	.328	.3606	.3934
.32	.0080	.02947	.0589	.0884	.1179	.1474	.1768	.2063	.2358	.2652	.2947	.3242	.3503
.33	.0071	.02616	.0523	.0785	.1046	.1308	.1569	.1831	.2092	.2354	.2616	.2877	.3120
.34	.0063	.02321	.0464	.0696	.0928	.1160	.1393	.1625	.1857	.2089	.2321	.2553	.2778
.35	.0056	.02063	.0413	.0619	.0825	.1032	.1238	.1444	.1650	.1857	.2063	.2270	.2474
.36	.0050	.01842	.0368	.0553	.0737	.0921	.1105	.1289	.1474	.1658	.1842	.2026	.2203
.37	.0045	.01658	.0332	.0497	.0663	.0829	.0995	.1160	.1326	.1492	.1658	.1824	.1962
.38	.0040	.01474	.02947	.0442	.0589	.0737	.0884	.1032	.1169	.1326	.1474	.1621	.1747
.39	.0035	.01289	.02579	.0387	.0516	.0645	.0774	.0903	.1032	.1160	.1289	.1419	.1556
.40	.0031	.01142	.02284	.0343	.0457	.0571	.0685	.0799	.0914	.1028	.1142	.1256	.1386

For weights of other metals use Conversion Factors on pages 250 and 251

ROD • BAR • WIRE

TUBING • PIPE
INVERSION FACTORS

DATA

WEIGHTS

COMPARATIVE WEIGHTS OF SHEETS AND PLATES

In Pounds per Square Foot

Thickness in inches	Decimal Equiv- alent	1100 Aluminum	Brass	Copper	Monel	Stainless Steel 18-8
1/32	.0313	.442	1.377	1.449	1.424	1.31
1/16	.0625	.882	2.754	2.898	2.848	2.63
3/32	.0938	1.32	4.131	4.347	4.272	3.94
1/8	.1250	1.76	5.508	5.796	5.742	5.25
5/32	.1563	2.21	6.885	7.245	7.166	6.57
3/16	.1875	2.65	8.262	8.694	8.590	7.985
7/32	.2188	3.09	9.640	10.145	10.01	9.315
1/4	.2500	3.53	11.02	11.59	11.48	10.646
5/16	.3125	4.41	13.77	14.49	14.33	13.308
3/8	.3750	5.29	16.52	17.39	17.23	15.968
7/16	.4375	6.17	19.28	20.29	20.07	18.630
1/2	.5000	7.06	22.03	23.18	22.97	21.291
9/16	.5625	7.94	24.79	26.08	25.81	24.185
5/8	.6250	8.82	27.54	28.98	28.71	26.614
11/16	.6875	9.70	30.29	31.88	31.56	29.276
3/4	.7500	10.58	33.05	34.78	34.45	31.937
13/16	.8125	11.47	35.80	37.67	37.44	34.599
7/8	.8750	12.35	38.56	40.57	40.19	37.260
15/16	.9375	13.23	41.31	43.47	43.20	39.922
1	1.0000	14.11	44.06	46.37	45.94	42.582
11/16	1.0625	14.99	46.82	49.27	48.96	45.244
1 1/8	1.1250	15.87	49.57	52.16	51.84	47.905
1 3/16	1.1875	16.76	52.33	55.06	54.72	50.567
1 1/4	1.2500	17.64	55.08	57.96	57.42	53.228
1 5/16	1.3125	18.52	57.83	60.86	60.48	55.890
1 3/8	1.3750	19.40	60.59	63.76	63.36	58.550
1 7/16	1.4375	20.28	63.34	66.65	66.24	61.212
1 1/2	1.5000	21.17	66.10	69.55	68.90	63.873
1 9/16	1.5625	22.05	68.85	72.45	72.00	66.535
1 5/8	1.6250	22.93	71.60	75.35	74.88	69.196
1 11/16	1.6875	23.81	74.36	78.25	77.76	71.858
1 3/4	1.7500	24.69	77.11	81.14	80.39	74.519
1 13/16	1.8125	25.58	79.87	84.04	83.52	77.181
1 7/8	1.8750	26.46	82.62	86.94	86.40	79.843
1 15/16	1.9375	27.34	85.37	89.84	89.28	82.504
2	2.0000	28.22	88.13	92.74	91.87	85.164

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

COMPARATIVE WEIGHTS OF ROUND ROD

In Pounds per Foot

Diameter in Inches	Decimal Equiv. alent	1100 Aluminum	Brass	Copper	MoneL	Stainless Steel 18-8
1/16	.0625	.0036	.0113	.0119	.011	.010
1/8	.125	.0145	.0452	.0474	.047	.042
3/16	.1875	.0324	.1017	.1067	.106	.094
1/4	.250	.0577	.1808	.1897	.188	.167
5/16	.3125	.0901	.2826	.2964	.294	.261
3/8	.375	.1297	.4069	.4268	.423	.376
7/16	.4375	.1766	.5538	.5809	.575	.511
1/2	.500	.2306	.7234	.7587	.752	.668
9/16	.5625	.2919	.9155	.9602	.951	.845
5/8	.625	.3604	1.130	1.185	1.17	1.043
11/16	.6875	.4361	1.368	1.434	1.42	1.262
3/4	.750	.5190	1.628	1.707	1.69	1.502
13/16	.8125	.6091	1.910	2.003	1.98	1.763
7/8	.875	.7064	2.215	2.324	2.30	2.044
15/16	.9375	.811	2.543	2.667	2.64	2.347
1	1.000	.9227	2.893	3.035	3.01	2.670
1 1/16	1.0625	1.0416	3.266	3.426	3.39	3.015
1 1/8	1.125	1.1677	3.662	3.841	3.81	3.380
1 3/16	1.1875	1.3012	4.080	4.279	4.24	3.766
1 1/4	1.250	1.4417	4.521	4.742	4.70	4.172
1 5/16	1.3125	1.5895	4.984	5.228	5.18	4.600
1 3/8	1.375	1.7445	5.470	5.738	5.68	5.049
1 7/16	1.4375	1.9066	5.979	6.271	6.21	5.518
1 1/2	1.500	2.076	6.510	6.828	6.76	6.009
1 9/16	1.5625	2.2527	7.064	7.409	7.34	6.519
1 5/8	1.625	2.4364	7.640	8.014	7.94	7.051
1 11/16	1.6875	2.6276	8.239	8.642	8.56	7.604
1 3/4	1.750	2.8257	8.861	9.294	9.21	8.178
1 13/16	1.8125	3.0312	9.505	9.970	9.88	8.773
1 7/8	1.875	3.2437	10.17	10.67	10.6	9.388
1 15/16	1.9375	3.4637	10.86	11.39	11.3	10.02
2	2.000	3.6908	11.57	12.14	12.0	10.68
2 1/8	2.125	4.166	13.07	13.70	13.6	12.06
2 1/4	2.250	4.671	14.65	15.36	15.2	13.52
2 3/8	2.375	5.204	16.32	17.12	17.0	15.06
2 1/2	2.500	5.767	18.08	18.97	18.8	16.69
2 5/8	2.625	6.358	19.94	20.91	20.7	18.40
2 3/4	2.750	6.978	21.88	22.95	22.7	20.20
2 7/8	2.875	7.627	23.92	25.08	24.9	22.07
3	3.000	8.304	26.04	27.31	27.1	24.03
3 1/4	3.250	9.746	30.56	32.05	31.8	28.21
3 1/2	3.500	11.30	35.45	37.18	36.8	32.71
3 3/4	3.750	12.98	40.69	42.68	42.3	37.55
4	4.000	14.76	46.30	48.56	48.1	42.73
4 1/4	4.250	16.67	52.27	54.82	54.3	48.23
4 1/2	4.500	18.68	58.59	61.45	60.9	54.07
5	5.000	23.07	72.34	75.87	75.2	66.76
5 1/2	5.500	28.00	87.52	91.80	90.9	80.78
6	6.000	33.22	104.21	109.3	108	96.13

For weights of other metals use Conversion Factors on pages 250 and 251

ROD • BAR • WIRE

STAINLESS STEEL

MONEL-NICKEL

DATA

MA

WEIGHTS

COMPARATIVE WEIGHTS OF SQUARE ROD

In Pounds per Foot

Size in Inches	Decimal Equiv- alent	1100 Aluminum	Brass	Copper	Monei	Stainless Steel 18-8
1/16	.0625	.0046	.0144	.0151	.015	.013
1/8	.125	.0183	.0576	.0604	.060	.053
3/16	.1875	.0413	.1295	.1358	.134	.120
1/4	.250	.0734	.2303	.2415	.239	.213
5/16	.3125	.1148	.3598	.3773	.374	.332
3/8	.375	.1652	.5181	.5434	.538	.478
7/16	.4375	.2249	.7051	.7396	.733	.651
1/2	.500	.2937	.9210	.9660	.957	.850
9/16	.5625	.3717	1.166	1.223	1.21	1.076
5/8	.625	.4589	1.439	1.509	1.50	1.328
11/16	.6875	.5553	1.741	1.826	1.81	1.607
3/4	.750	.6608	2.072	2.174	2.15	1.913
1 3/16	.8125	.7756	2.432	2.551	2.53	2.245
7/8	.875	.8994	2.821	2.958	2.93	2.603
1 5/16	.9375	1.0325	3.238	3.396	3.36	2.988
1	1.000	1.1748	3.684	3.864	3.83	3.400
1 1/16	1.0625	1.3262	4.159	4.362	4.32	3.838
1 1/8	1.125	1.4868	4.663	4.890	4.85	4.303
1 3/16	1.1875	1.6567	5.195	5.449	5.40	4.795
1 1/4	1.250	1.8356	5.756	6.038	5.98	5.313
1 5/16	1.3125	2.0238	6.346	6.656	6.59	5.857
1 1/8	1.375	2.2211	6.965	7.305	7.24	6.428
1 7/16	1.4375	2.4276	7.613	7.985	7.91	7.026
1 1/2	1.500	2.6433	8.289	8.694	8.61	7.650
1 9/16	1.5625	2.862	8.994	9.434	9.35	8.301
1 1/4	1.625	3.1021	9.73	10.20	10.1	8.98
1 11/16	1.6875	3.34	10.49	11.00	10.9	9.68
1 3/4	1.750	3.5978	11.28	11.83	11.7	10.41
1 13/16	1.8125	3.85	12.10	12.69	12.6	11.17
1 7/8	1.875	4.1301	12.95	13.58	13.5	11.95
1 15/16	1.9375	4.40	13.83	14.51	14.4	12.76
2	2.000	4.6992	14.74	15.46	15.3	13.60
2 1/16	2.125	5.419	16.64	17.45	17.3	15.35
2 1/4	2.250	6.076	18.65	19.56	19.4	17.21
2 3/16	2.375	6.769	20.78	21.80	21.6	19.18
2 1/2	2.500	7.500	23.03	24.15	23.9	21.25
2 5/16	2.625	8.269	25.39	26.63	26.4	23.43
2 3/4	2.750	9.076	27.86	29.22	28.9	25.71
2 7/8	2.875	9.919	30.45	31.94	31.6	28.10
3	3.000	10.80	33.16	34.78	34.5	30.60
3 1/4	3.250	12.41	38.77	40.81	40.4	35.9
3 1/2	3.500	14.39	44.96	47.33	46.9	41.7
3 3/4	3.750	16.52	51.62	54.34	53.8	47.8
4	4.000	18.80	58.73	61.82	61.2	54.4

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

COMPARATIVE WEIGHTS OF HEXAGONAL ROD

In Pounds per Foot

Size in Inches	Decimal Equivalent	1100 Aluminum	Brass	Copper	Mone and Nickel	Steel
1/16	.0625	.004	.0125	.0131	.013	.012
1/8	.125	.0158	.0499	.0523	.052	.046
3/16	.1875	.0358	.1122	.1176	.117	.104
1/4	.250	.0631	.1994	.2091	.207	.184
5/16	.3125	.0990	.3116	.3268	.324	.288
3/8	.375	.1431	.4487	.4706	.466	.414
7/16	.4375	.1948	.6107	.6405	.635	.564
1/2	.500	.2543	.7976	.8366	.829	.736
9/16	.5625	.3219	1.009	1.059	1.05	.932
5/8	.625	.3974	1.246	1.307	1.30	1.15
11/16	.6875	.4810	1.508	1.582	1.57	1.39
3/4	.750	.5722	1.795	1.882	1.87	1.66
13/16	.8125	.6716	2.106	2.209	2.19	1.94
7/8	.875	.7789	2.443	2.562	2.54	2.25
15/16	.9375	.8931	2.804	2.941	2.91	2.59
1	1.000	1.016	3.190	3.346	3.32	2.94
1 1/16	1.0625	1.148	3.602	3.778	3.74	3.32
1 1/8	1.125	1.287	4.038	4.235	4.20	3.73
1 3/16	1.1875	1.433	4.499	4.719	4.67	4.15
1 1/4	1.250	1.588	4.985	5.229	5.18	4.60
1 5/16	1.3125	1.751	5.496	5.765	5.71	5.07
1 3/8	1.375	1.922	6.032	6.327	6.27	5.57
1 7/16	1.4375	2.100	6.593	6.915	6.85	6.08
1 1/2	1.500	2.286	7.178	7.529	7.46	6.63
1 9/16	1.5625	2.484	7.789	8.170	8.09	7.19
1 5/8	1.625	2.687	8.425	8.836	8.75	7.77
1 11/16	1.6875	2.897	9.085	9.529	9.43	8.38
1 3/4	1.750	3.12	9.77	10.25	10.2	9.02
1 13/16	1.8125	3.34	10.48	10.99	10.9	9.67
1 7/8	1.875	3.58	11.22	11.76	11.7	10.35
1 15/16	1.9375	3.82	11.98	12.56	12.4	11.05
2	2.000	4.07	12.76	13.39	13.3	11.78
2 1/8	2.125	4.59	14.41	15.11	15.0	13.30
2 1/4	2.250	5.15	16.15	16.94	16.8	14.91
2 3/8	2.375	5.74	18.00	18.88	18.7	16.61
2 1/2	2.500	6.36	19.94	20.91	20.7	18.40
2 5/8	2.625	7.01	21.98	23.06	22.8	20.29
2 3/4	2.750	7.69	24.13	25.31	25.1	22.27
2 7/8	2.875	8.41	26.37	27.66	27.4	24.34
3	3.000	9.16	28.71	30.12	29.8	26.50
3 1/4	3.250	10.75	33.58	35.35	35.0	31.1
3 1/2	3.500	12.46	38.94	40.99	40.6	36.07
3 3/4	3.750	14.31	44.71	47.06	46.6	41.4
4	4.000	16.28	50.86	53.54	53.0	47.11

For weights of other metals use Conversion Factors on pages 250 and 251

STAINLESS STEEL

MONEI-NICKEL

DATA

TUBING • PIPE

CONVERSION FACTORS

COMPARATIVE WEIGHTS OF RECTANGULAR BARS

**Based on Steel in Pounds
per Foot**

WIDTH (in Inches)													
Thickness (in Inches)	3/8		1/2		5/8		3/4		1		1 1/8		1 1/2
	3/8	1/2	5/8	1/2	1	5/8	1	5/8	1	5/8	1 1/8	2	2 1/8
1/16	.0598	.0531	.0664	.0797	.0930	.1063	.1195	.1328	.146	.159	.173	.186	.199
1/16	.0797	.1063	.1328	.1594	.1859	.2125	.2391	.2656	.292	.319	.345	.372	.398
3/32	.1195	.1594	.1952	.2381	.288	.3188	.3586	.3984	.438	.478	.518	.558	.598
1/8	.1594	.2125	.2566	.3188	.3719	.4250	.4781	.5313	.584	.638	.691	.744	.797
5/64	.1892	.2656	.3320	.3884	.4648	.5313	.5977	.6641	.730	.797	.863	.930	.996
3/32	.2391	.3188	.3884	.4578	.5608	.6375	.7172	.7969	.877	.956	1.036	1.116	1.195
7/64	.2389	.3119	.3948	.4578	.5608	.6375	.7172	.7969	.877	1.116	1.209	1.302	1.395
1/4	.3188	.4250	.5313	.6375	.7438	.8900	.9653	.9625	1.169	1.275	1.381	1.488	1.594
5/32	.3884	.5313	.6641	.7869	.9297	1.1156	1.3016	1.4751	1.6734	1.8594	2.045	2.231	2.417
3/16	.4781	.6375	.7869	.9563	1.1156	1.3016	1.4751	1.6734	1.8594	2.045	2.231	2.417	2.603
11/64	.5578	.7438	.9297	1.1156	1.3016	1.4751	1.6734	1.8594	2.045	2.231	2.417	2.603	2.795
1/2	.6375	.8500	1.0625	1.2750	1.4875	1.7000	1.9125	2.1250	2.3338	2.550	2.763	2.975	3.188
9/64	.7172	.9663	1.1953	1.4344	1.6734	1.9125	2.1506	2.3906	2.630	2.869	3.1083	3.437	3.825
11/32	.7969	.9663	1.1953	1.4344	1.6734	1.9125	2.1506	2.3906	2.630	2.869	3.1083	3.437	3.825
3/4	.8766	.9663	1.1953	1.4344	1.6734	1.9125	2.1506	2.3906	2.630	2.869	3.1083	3.437	3.825
13/32	.9563	1.2750	1.5388	1.9125	2.2313	2.550	2.8688	3.1875	3.506	3.825	4.144	4.463	4.781
7/16	1.0359	1.3813	1.7126	2.0719	2.4172	2.7625	3.1078	3.4531	3.798	4.144	4.834	5.180	5.525
11/16	1.1156	1.4875	1.8594	2.2132	2.6031	2.9750	3.3469	3.7188	4.091	4.463	4.834	5.206	5.578
15/32	1.1953	1.5388	1.9922	2.3906	2.7891	3.1875	3.5859	3.9444	4.383	4.781	5.180	5.578	6.035
1/16	1.2750	1.7800	2.1250	2.550	3.4000	3.8250	4.2500	4.675	5.100	5.525	5.950	6.375	6.800
1	2.0719	2.7625	3.4531	4.1438	4.8344	5.5250	6.2156	6.9063	7.597	8.288	8.978	9.669	10.359
1 1/2	2.1250	2.8700	3.5625	4.2500	4.9500	5.6250	6.3175	7.0125	7.705	8.400	9.100	9.800	10.500
1 1/8	2.1938	2.9400	3.6375	4.3250	5.0250	5.7000	6.3875	7.0875	7.780	8.475	9.175	9.875	10.575
1 3/8	2.2638	3.0100	3.7125	4.4000	5.1000	5.7875	6.4750	7.1725	7.865	8.560	9.255	9.950	10.650
1 5/8	2.3338	3.0800	3.8000	4.4750	5.1750	5.8625	6.5500	7.2475	7.940	8.635	9.330	10.025	10.720
1 7/8	2.4038	3.1500	3.8875	4.5500	5.2500	5.9375	6.6250	7.3225	7.913	8.608	9.295	9.980	10.675
1 9/8	2.4738	3.2200	3.9750	4.6250	5.3250	6.0125	6.7000	7.3950	7.904	8.599	9.285	9.970	10.660
1 11/8	2.5438	3.2900	4.0625	4.7000	5.4000	6.0938	6.7813	7.4763	8.064	8.659	9.344	10.030	10.725
1 13/8	2.6138	3.3600	4.1500	4.7750	5.4750	6.1688	6.8563	7.5513	8.141	8.736	9.421	10.107	10.800
1 15/8	2.6838	3.4300	4.2375	4.8500	5.5500	6.2500	6.9388	7.6338	8.224	8.819	9.494	10.179	10.863
1 17/8	2.7538	3.5000	4.3250	4.9250	5.6250	6.3250	7.0163	7.7113	8.302	8.897	9.572	10.257	10.940
1 19/8	2.8238	3.5700	4.4125	5.0000	5.7000	6.4000	7.0938	7.7888	8.379	8.974	9.659	10.344	11.027
1 21/8	2.8938	3.6400	4.5000	5.0750	5.7750	6.4750	7.1688	7.8638	8.454	9.049	9.734	10.424	11.107
1 23/8	2.9638	3.7100	4.5875	5.1500	5.8500	6.5500	7.2475	7.9425	8.535	9.126	9.811	10.501	11.184
1 25/8	3.0338	3.7800	4.6750	5.2250	5.9250	6.6250	7.3225	7.9113	8.526	9.117	9.802	10.592	11.275
1 27/8	3.1038	3.8500	4.7625	5.2950	5.9950	6.7000	7.3950	8.0875	8.678	9.269	9.954	10.644	11.327
1 29/8	3.1738	3.9200	4.8500	5.3750	6.0750	6.7750	7.4763	8.1688	8.760	9.351	10.036	10.727	11.410
1 31/8	3.2438	3.9900	4.9375	5.4500	6.1500	6.8500	7.5513	8.2425	8.833	9.424	10.114	10.805	11.488
1 33/8	3.3138	4.0600	5.0250	5.5250	6.2250	6.9250	7.6163	8.3013	8.894	9.485	10.175	10.866	11.549
1 35/8	3.3838	4.1300	5.1125	5.6000	6.3000	6.9750	7.6688	8.3563	8.947	9.538	10.228	10.919	11.602
1 37/8	3.4538	4.2000	5.2000	5.6750	6.3750	7.0750	7.7638	8.4513	9.042	9.633	10.324	11.015	11.695
1 39/8	3.5238	4.2700	5.2875	5.7500	6.4500	7.1500	7.8468	8.5313	9.122	9.713	10.403	11.094	11.785
1 41/8	3.5938	4.3400	5.3750	5.8250	6.5250	7.2250	7.9375	8.6263	9.217	9.808	10.498	11.189	11.876
1 43/8	3.6638	4.4100	5.4625	5.9000	6.6000	7.3000	7.9813	8.6713	9.262	9.853	10.543	11.234	11.921
1 45/8	3.7338	4.4800	5.5500	5.9750	6.6750	7.3750	8.0713	8.7613	9.352	9.943	10.633	11.324	12.011
1 47/8	3.8038	4.5500	5.6375	6.0500	6.7500	7.4500	8.1613	8.8513	9.443	10.034	10.724	11.415	12.092
1 49/8	3.8738	4.6200	5.7250	6.1250	6.8250	7.5000	8.2513	8.9413	9.534	10.125	10.815	11.506	12.193
1 51/8	3.9438	4.6900	5.8125	6.2000	6.9000	7.5800	8.3413	9.0313	9.624	10.215	10.905	11.596	12.284
1 53/8	4.0138	4.7600	5.9000	6.2750	6.9750	7.6500	8.4313	9.1213	9.715	10.306	11.096	11.787	12.475
1 55/8	4.0838	4.8300	5.9875	6.3500	7.0500	7.7300	8.5213	9.2113	9.806	10.397	11.088	11.778	12.466
1 57/8	4.1538	4.9000	6.0750	6.4250	7.1250	7.8000	8.6113	9.3013	9.897	10.488	11.179	11.869	12.557
1 59/8	4.2238	4.9700	6.1625	6.5000	7.1875	7.8750	8.7013	9.3913	9.988	10.580	11.271	11.961	12.650
1 61/8	4.2938	5.0400	6.2500	6.5750	7.2500	7.9250	8.5913	9.2813	9.878	10.469	11.162	11.852	12.541
1 63/8	4.3638	5.1100	6.3375	6.6500	7.3250	7.9750	8.6813	9.3713	9.965	10.556	11.247	11.937	12.627
1 65/8	4.4338	5.1800	6.4250	6.7250	7.4000	8.0000	8.7713	9.4613	10.053	10.644	11.335	12.025	12.714
1 67/8	4.5038	5.2500	6.5125	6.8000	7.4750	8.1500	8.8613	9.5513	10.143	10.734	11.425	12.115	12.803
1 69/8	4.5738	5.3200	6.6000	6.8750	7.5500	8.2250	8.9513	9.6413	10.232	10.823	11.513	12.203	12.892
1 71/8	4.6438	5.3900	6.6875	7.0500	7.7250	8.3750	9.0613	9.7513	10.342	10.933	11.623	12.313	13.002
1 73/8	4.7138	5.4600	6.7750	7.1250	7.8000	8.4500	9.1513	9.8413	10.432	11.023	11.713	12.403	13.092
1 75/8	4.7838	5.5300	6.8625	7.2000	7.8750	8.5250	9.2113	9.9013	10.492	11.083	11.773	12.463	13.152
1 77/8	4.8538	5.6000	6.9500	7.2750	7.9500	8.6000	9.3013	9.9913	10.582	11.173	11.863	12.553	13.242
1 79/8	4.9238	5.6700	7.0375	7.3500	8.0250	8.6750	9.3913	10.0813	10.672	11.263	11.953	12.643	13.332
1 81/8	4.9938	5.7400	7.1250	7.4250	8.1000	8.7500	9.4813	10.1713	10.762	11.353	12.043	12.733	13.422
1 83/8	5.0638	5.8100	7.2125	7.5000	8.1750	8.8250	9.5713	10.2613	10.852	11.443	12.133	12.823	13.512
1 85/8	5.1338	5.8800	7.3000	7.5750	8.2500	8.9000	9.6613	10.3513	10.942	11.533	12.223	12.913	13.602
1 87/8	5.2038	5.9500	7.3875	7.6625	8.3250	8.9500	9.7513	10.4413	11.032	11.623	12.313	13.003	13.692
1 89/8	5.2738	6.0200	7.4750	7.7500	8.4000	9.0000	9.8413	10.5313	11.122	11.713	12.403	13.092	13.782
1 91/8	5.3438	6.0900	7.5625	7.8425	8.4500	9.0500	9.9313	10.6213	11.212	11.803	12.493	13.183	13.872
1 93/8	5.4138	6.1600	7.6500	7.9375	8.5000	9.1000	9.9913	10.6813	11.272	11.863	12.553	13.242	13.932
1 95/8	5.4838	6.2300	7.7375	8.0250	8.5750	9.1500	9.9813	10.6713	11.262	11.853	12.543	13.233	13.922
1 97/8	5.5538	6.3000	7.8250	8.1125	8.6500	9.2250	10.0113	10.7013	11.292	11.883	12.573	13.263	13.952
1 99/8	5.6238	6.3700	7.9125	8.2000	8.7250	9.3000	10.0913	10.7813	11.372	11.963	12.653	13.343	14.032
1 101/8	5.6938	6.4400	7.9000	8.1875	8.6500	9.2250	10.0813	10.7713	11.362	11.953	12.643	13.332	14.022
1 103/8	5.7638	6.5100	7.9875	8.2750	8.7500	9.3250	10.1713	10.8613	11.452	12.043	12.733	13.422	14.112
1 105/8	5.8338	6.5800	8.0750	8.3625	8.8000	9.3750	10.2613	10.9513	11.542	12.133	12.823	13.512	14.192
1 107/8	5.9038	6.6500	8.1625	8.4500	8.8750	9.4000	10.3513						

WEIGHTS

COMPARATIVE WEIGHTS OF RECTANGULAR BARS (Continued)

**Based on Steel in Pounds
per Foot**

WIDTH (in inches)									
Thickness (in inches)	2 ¹ / ₄	2 ⁷ / ₈	3	3 ¹ / ₄	3 ¹ / ₂	3 ³ / ₄	4	4 ¹ / ₄	4 ¹ / ₂
1 ¹ / ₁₆	292	305	319	345	372	398	425	452	478
1 ¹ / ₁₆	584	611	638	691	744	797	850	903	956
1 ³ / ₁₆	877	916	1.036	1.116	1.195	1.274	1.355	1.434	1.514
1 ⁵ / ₁₆	1.169	1.222	1.275	1.381	1.488	1.594	1.700	1.806	1.913
1 ¹ / ₈	1.461	1.527	1.593	1.659	1.727	1.859	1.992	2.125	2.258
1 ³ / ₈	1.753	1.833	1.913	2.072	2.231	2.391	2.550	2.709	2.869
1 ⁵ / ₈	2.045	2.138	2.231	2.417	2.603	2.789	3.161	3.347	3.533
1 ¹ / ₂	2.338	2.444	2.550	2.763	2.975	3.188	3.613	3.825	4.038
1 ³ / ₄	2.922	3.066	3.185	3.453	3.719	3.984	4.250	4.516	4.781
1 ⁵ / ₈	3.506	3.656	3.825	4.144	4.463	4.781	5.100	5.419	5.738
1 ¹ / ₄	4.091	4.277	4.463	4.834	5.206	5.578	5.950	6.322	6.694
1 ¹ / ₂	4.675	4.888	5.100	5.525	5.950	6.375	6.800	7.225	7.650
1 ¹ / ₈	5.259	5.498	5.738	6.216	6.694	7.172	7.650	8.128	8.606
1 ³ / ₈	5.844	6.109	6.375	6.906	7.433	7.969	8.500	9.031	9.563
1 ⁵ / ₈	6.428	6.720	7.013	7.595	8.192	8.766	9.350	9.934	10.519
1 ¹ / ₄	7.013	7.331	7.630	8.288	8.925	9.653	10.200	10.838	11.475
1 ¹ / ₂	7.597	7.942	8.288	8.978	9.669	10.359	11.050	11.741	12.431
1 ¹ / ₁₆	8.181	8.553	8.945	9.669	10.413	11.156	11.953	12.750	13.547
1 ¹ / ₈	8.766	9.164	9.563	10.359	11.156	11.953	12.750	13.547	14.344
1 ¹ / ₄	9.350	9.775	10.200	11.900	12.750	13.600	14.450	15.300	16.150
1 ¹ / ₂	10.519	10.997	11.475	12.431	13.388	14.344	15.300	16.256	17.213
1 ¹ / ₈	11.688	12.219	12.750	13.813	14.875	15.938	17.000	18.063	19.126
1 ³ / ₈	12.856	13.441	14.025	15.194	16.363	17.500	18.700	19.869	21.038
1 ⁵ / ₈	14.025	14.663	15.300	16.575	17.850	19.155	20.400	21.675	22.950
1 ¹ / ₂	15.194	15.884	16.575	17.956	19.338	20.719	22.100	23.481	24.863
1 ³ / ₈	16.363	17.106	17.850	19.338	20.719	23.800	25.288	26.688	28.081
1 ⁵ / ₈	17.531	18.328	19.125	20.813	22.313	23.906	25.500	27.094	28.688
1 ¹ / ₄	18.700	19.550	20.000	22.100	23.800	25.500	27.200	28.900	30.300
1 ¹ / ₂	21.869	22.772	23.675	24.883	25.288	26.900	27.706	28.900	30.700
1 ¹ / ₄	22.038	23.994	24.950	26.775	28.688	30.600	32.513	34.425	36.338
1 ¹ / ₂	24.075	24.988	25.950	27.883	29.688	31.600	33.513	35.425	37.338

CONVERSION FACTORS

For the Weight of	Multiply the Weight of Steel by
ALUMINUM (1100)	.345
ALUMINUM (2024)	.352
BRASS	1.083
COPPER	1.137
MONEL OR NICKEL	1.120
18-8 STAINLESS STEEL	1.007

WEIGHTS

COMPARATIVE WEIGHTS OF WIRE

Pounds per 1000 Feet

Diameter		1100 Aluminum	Brass	Copper	Monel and Nickel
B. & S. Gauge	Decimal				
40	.0031	.....	.0276	.0299	.0297
39	.0035	.....	.0352	.0377	.0375
38	.004	.....	.0460	.0476	.0473
37	.0045	.....	.0582	.0600	.0596
36	.0050	.023	.0719	.0757	.0752
35	.0056	.029	.0902	.0954	.0948
34	.0063	.036	.1141	.1203	.1195
33	.0071	.046	.1449	.1517	.1508
32	.0080	.058	.1840	.1913	.1901
31	.0089	.074	.2277	.2413	.2398
30	.0100	.093	.2875	.3042	.3023
29	.0113	.120	.3671	.3836	.3812
28	.0126	.150	.4564	.4837	.4807
27	.0142	.190	.5796	.6100	.6062
26	.0159	.230	.7267	.7692	.7644
25	.0179	.290	.9210	.9699	.9638
24	.0201	.380	1.161	1.223	1.215
23	.0226	.490	1.468	1.542	1.532
22	.0254	.590	1.855	1.945	1.933
21	.0285	.750	2.335	2.452	2.437
20	.0320	.940	2.944	3.092	3.073
19	.0359	1.20	3.705	3.899	3.875
18	.0403	1.50	4.669	4.917	4.886
17	.0453	1.90	5.899	6.200	6.161
16	.0508	2.30	7.418	7.818	7.769
15	.0571	3.10	9.372	9.858	9.796
14	.0641	3.80	11.81	12.43	12.35
13	.0720	4.80	14.90	15.68	15.58
12	.0808	6.00	18.77	19.77	19.65
11	.0907	7.60	23.65	24.92	24.76
10	.1019	9.60	29.85	31.43	31.23
9	.1144	12.10	37.62	39.63	39.38
8	.1285	15.20	47.47	49.98	49.67
7	.1443	19.30	59.86	63.02	62.63
6	.1620	24.20	75.44	79.46	78.96
5	.1819	30.50	95.11	100.20	99.57
4	.2043	38.50	120.00	126.40	125.61
3	.2294	48.50	151.30	159.30	158.30
2	.2576	61.20	190.70	200.90	199.64
1	.2893	77.20	240.60	253.30	251.72
1/0	.3249	97.40	303.40	319.50	317.50
2/0	.3648	122.80	382.50	402.80	400.28
3/0	.4096	.....	482.30	507.90	504.73
4/0	.4600	.....	608.30	640.50	636.50

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

COMPARATIVE WEIGHTS OF PIPE

Standard Pipe Size
in Pounds per Foot
Wall Shown for Brass

Nominal Size in Inches	Outside Diameter in Inches	Wall Thickness in Inches	6061 6063 Aluminum	85 Red Brass	Steel	Monel
1/8	.405	.0620	.085	.253	.245	.276
1/4	.540	.0825	.147	.4496	.425	.478
3/8	.675	.0905	.196	.6302	.568	.639
1/2	.840	.1075	.294	.9381	.851	.958
5/8	1.050	.1140	.391	1.271	1.131	1.27
1	1.315	.1265	.581	1.791	1.679	1.89
1 1/4	1.660	.1460	.786	2.633	2.273	2.56
1 1/2	1.900	.1500	.940	3.127	2.718	3.06
2	2.375	.1565	1.264	4.136	3.653	4.11
2 1/2	2.875	.1875	2.004	6.003	5.793	6.52
3	3.500	.2190	2.621	8.56	7.576	8.53
3 1/2	4.000	.2500	3.151	11.17	9.109	10.3
4	4.500	.2500	3.733	12.66	10.79	12.1
4 1/2	5.000	.2500	.....	.....	.....	.....
5	5.563	.2500	5.057	15.85	14.62	16.4
6	6.625	.2500	6.564	18.99	18.97	21.4
7	7.625	.2815	.....	.....	.....	.....
8	8.625	.3125	9.878	30.95	28.55	32.2
9	9.625	.3440	.....	.....	.....	.....
10	10.750	.3655	14.000	45.22	40.48	.....
11	11.750	.3750	.....	50.82	46.25	.....
12	12.750	.3750	17.14	55.28	50.71	.....

NOTE: Pipe is manufactured to Schedule 40, and wall thickness varies slightly. Weight per foot is for Schedule 40.

COMPARATIVE WEIGHTS OF PIPE (Continued)

Extra Heavy Pipe Size
in Pounds per Foot
Wall Shown for Brass

Nominal Size in Inches	Outside Diameter in Inches	Wall Thickness in Inches	6061 6063 Aluminum	85 Red Brass	Steel	Monel
1/8	.405	.100	.109	.363	.3145	.354
1/4	.540	.123	.185	.611	.5351	.603
3/8	.675	.127	.256	.829	.7388	.832
1/2	.840	.149	.376	1.23	1.0988	1.23
5/8	1.050	.157	.510	1.67	1.474	1.66
1	1.315	.182	.751	2.46	2.172	2.45
1 1/4	1.660	.194	1.037	3.39	2.997	3.37
1 1/2	1.900	.203	1.256	4.10	3.631	4.09
2	2.375	.221	1.737	5.67	5.022	5.66
2 1/2	2.875	.280	2.650	8.66	7.661	8.63
3	3.500	.304	3.547	11.6	10.25	11.5
3 1/2	4.000	.321	4.326	14.1	12.50	14.1
4	4.500	.341	5.183	16.9	14.98	16.9
4 1/2	5.000	.375	.....	.....	.....	.....
5	5.563	.375	7.188	23.2	20.78	23.4
6	6.625	.437	9.884	32.2	28.57	32.2
7	7.625	.500	.....	.....	38.05	.....
8	8.625	.500	15.01	48.4	43.39	48.9
9	9.625	.500	.....	.....	48.73	.....
10	10.750	.500	22.25	61.1	54.74	.....

STAINLESS STEEL

MONEL-NICKEL

TUBING • PIPE

CONVERSION FACTORS

DATA

WEIGHTS

COMPARATIVE WEIGHTS
OF PIPE (Continued)Double Extra Heavy Pipe Size
in Pounds per Foot
Wall Shown for Brass

Nominal Size (in Inches)	Outside Diameter in Inches	Wall Thickness in Inches	85 Red Brass	Copper	Steel
1/2	.840	.294	1.912	1.955	1.714
3/4	1.050	.308	2.723	2.783	2.440
1	1.310	.358	4.081	4.172	3.659
1 1/4	1.665	.382	5.816	5.945	5.214
1 1/2	1.905	.400	7.148	7.306	6.408
2	2.370	.436	10.07	10.29	9.029
2 1/2	2.870	.552	15.28	15.61	13.695
3	3.505	.600	20.73	21.19	18.583
3 1/2	4.000	.636	25.49	26.05	22.850
4	4.500	.674	30.72	31.40	27.541
4 1/2	5.000	.710	.....	37.09	32.530
5	5.563	.750	43.00	43.96	38.552
6	6.625	.864	59.30	60.61	53.160
7	7.625	.875	.....	.....	63.079
8	8.625	.875	80.78	82.57	72.424

WEIGHT OF SQUARE
STEEL TUBING

Size Out-side	Wall Thickness		Size Inside	Pounds per Foot	Size Out-side	Wall Thickness		Size Inside	Pounds per Foot
	Inches	B. W. Gauge				Inches	B. W. Gauge		
1/4	.035	20	.180	.1023	1 1/4	.049	18	1.152	.8003
	.049	18	.152	.1339		.065	16	1.120	1.0474
3/8	.035	20	.305	.1618		.083	14	1.084	1.3170
	.049	18	.277	.2172		.120	11	-1.010	1.8439
1/2	.035	20	.430	.2213		.134	10	.982	2.0336
	.049	18	.402	.3005	1 3/8	.049	18	1.277	.8836
	.065	16	.370	.3845		.065	16	1.245	1.1579
5/8	.035	20	.555	.2808	1 1/2	.049	18	1.402	.9668
	.049	18	.527	.3838		.065	16	1.370	1.2684
	.065	16	.495	.4950		.083	14	1.334	1.5992
3/4	.035	20	.680	.3403		.120	11	1.260	2.2519
	.049	18	.652	.4671	1 3/4	.065	16	1.620	1.4894
	.065	16	.620	.6055		.083	14	1.584	1.8813
	.095	13	.560	.8462		.120	11	1.510	2.6598
	.120	11	.510	1.0280	2	.065	16	1.870	1.7103
7/8	.035	20	.805	.3998		.083	14	1.834	2.1635
	.049	18	.777	.5504		.095	13	1.810	2.4610
	.065	16	.745	.7160		.120	11	1.760	3.0678
	.095	13	.685	1.0076	2 1/2	.083	14	2.334	2.7278
1	.035	20	.930	.4593		.120	11	2.260	3.8837
	.049	18	.902	.6337	3	.120	11	2.760	4.6996
	.065	16	.870	.8264		.180	7	2.640	6.9025
	.072	15	.856	.9087		.238	4	2.524	8.9389
	.083	14	.834	1.0348	4	.180	7	3.640	9.3503
	.109	12	.782	1.3207		.238	4	3.524	12.1753
1 1/8	.065	16	.995	.9369					

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

WEIGHTS PER FOOT — SEAMLESS BRASS TUBING

Round Tubes by Outside Diameter

SIZE in inches	THICKNESS OF WALL BY STUBS GAUGE AND DECIMAL EQUIVALENT IN INCHES - POUNDS PER LINEAL FOOT																		
	.00 .300	.01 .284	.02 .269	.03 .259	.04 .249	.05 .239	.06 .229	.07 .203	.08 .180	.09 .165	.10 .148	.11 .134	.125 .120	.136 .120	.143 .109	.15 .095	.16 .083	.17 .072	.18 .065
1/8																			
3/16																			
5/16																			
3/8																			
7/16																			
1/2																			
9/16																			
5/8																			
3/4																			
7/8																			
1																			
1 1/16																			
1 3/16																			
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1 7/16																			
1 1/2																			
1 9/16																			
1 5/8																			
1 3/4																			
1 7/8																			
2																			
2 1/16																			
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12 3/16																			
12 5/16																			
12 7/16																			
12 1/2																			
12 9/16																			

For weights of other metals use Conversion Factors on pages 250 and 251.

CONVERSION FACTORS

DATA

COPPER

INDUSTRIAL WELDING
SIZING PRODUCTS

INDUSTRIAL PRODUCTS

WEIGHTS

WEIGHTS PER FOOT —
SEAMLESS BRASS TUBING
(Continued)Round Tubes by
Outside Diameter

SIZE O.D. in Inches	THICKNESS OF WALL BY STUBS GAUGE AND DECIMAL EQUIVALENT IN INCHES — POUNDS PER LINEAL FOOT																										
	.1	.2	.284	.3	.259	.5	.226	.6	.203	.7	.180	.8	.165	.9	.148	.10	.134	.125	.11	.109	.120	.11	.095	.083	.072	.065	.058	.049
4	12.85	12.23	11.21	9.62	8.91	7.956	7.321	6.596	5.994	5.61	5.387	4.907	4.292	3.762	3.272	2.959	2.645	2.240									
$\frac{1}{4}$	13.72	13.04	11.96	10.26	9.50	8.476	7.798	7.024	6.381	5.97	5.734	5.222	4.567	4.002	3.480	3.147	2.813	2.382									
$\frac{3}{8}$	14.59	13.87	12.71	10.89	10.09	8.997	8.276	7.452	6.769	6.33	6.081	5.538	4.842	4.242	3.689	3.335	2.981	2.523									
$\frac{1}{2}$	15.46	14.68	13.46	11.53	10.68	9.517	8.753	7.880	7.157	6.69	6.428	5.833	5.117	4.482	3.897	3.523	3.149	2.665									
5	16.33	15.51	14.21	12.17	11.27	10.04	9.230	8.308	7.544	7.05	6.775	6.168	5.391	4.722	4.105	3.711	3.316	2.807									
$\frac{1}{4}$	17.20	16.34	14.36	12.80	11.85	10.56	9.708	8.736	7.932	7.41	7.122	6.483	5.666	4.962	4.313	3.899	3.484	2.949									
$\frac{3}{8}$	18.07	17.16	15.71	13.44	12.44	11.08	10.18	9.165	8.319	7.78	7.470	6.799	5.941	5.202	4.522	4.087	3.652	3.090									
$\frac{1}{2}$	18.93	17.98	16.45	14.08	13.03	11.60	10.66	9.593	8.707	8.14	7.817	7.114	6.216	5.442	4.730	4.275	3.820	3.232									
6	19.81	18.80	17.20	14.71	13.62	12.12	11.14	10.02	9.095	8.50	8.164	7.429	6.490	5.628	4.938	4.463	3.987	3.374									
$\frac{1}{4}$	20.67	19.62	17.95	15.35	14.20	12.64	11.62	10.45	9.482	8.86	8.511	7.745	6.765	5.922	5.147	4.651	4.155	3.516									
$\frac{3}{8}$	21.55	20.46	18.70	15.99	14.79	13.16	12.09	10.88	9.870	9.22	8.858	8.060	7.040	6.162	5.355	4.839	4.323	3.657									
$\frac{1}{2}$	22.41	21.29	19.45	16.62	15.38	13.68	12.57	11.30	10.26	9.58	9.205	8.375	7.315	6.402	5.563	5.027	4.491	3.799									
7	23.29	22.09	20.20	17.26	15.96	14.20	13.05	11.73	10.64	9.95	9.552	8.690	7.590	6.642	5.771	5.215	4.658	3.941									
$\frac{1}{4}$	24.15	22.19	20.95	17.89	16.55	14.72	13.53	12.16	11.03	10.31	9.899	9.006	8.263	5.980	5.403	4.826	4.082										
$\frac{3}{8}$	25.02	23.75	21.70	18.53	17.14	15.24	14.00	12.59	11.42	10.67	10.25	9.321	8.139	7.123	6.188	5.591	4.994										
$\frac{1}{2}$	25.89	24.57	22.45	19.17	17.73	15.77	14.48	13.02	11.81	11.03	10.59	9.636	8.414	7.363	6.396	5.779	5.162										
8	26.19	23.20	19.80	18.31	16.29	14.96	13.45	12.20	11.39	10.94	9.952	8.689	7.603	6.604	5.968	5.33											
$\frac{1}{4}$	27.69	24.70	21.08	19.49	17.33	15.91	14.30	12.97	12.12	11.63	10.58	9.238	8.083	7.021	6.344												
$\frac{3}{8}$	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													
$\frac{1}{2}$	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													
9	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													
$\frac{1}{4}$	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													
$\frac{3}{8}$	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													
$\frac{1}{2}$	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													
10	29.19	24.89	21.98	19.01	17.51	15.77	14.27	12.85	11.98	10.90	9.513	8.324	7.230	6.532													

For weights of other metals use Conversion Factors on pages 250 and 251

WEIGHTS

WEIGHTS PER FOOT — SEAMLESS BRASS TUBING (Continued)

SIZE O.D. in Inches	THICKNESS OF WALL BY STUBS GAUGE AND DECIMAL EQUIVALENT IN INCHES—POUNDS PER LINEAL FOOT											
	.19	.20	.21	.22	.23	.24	.25	.26	.27	.28	.29	.30
.042	.035	.032	.028	.025	.022	.020	.018	.016	.014	.013	.010	.009
1/16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5/64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9/64	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7/32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7/16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.040	.036	.034	.031	.029	.026	.024	.022	.020	.018	.017	.016	.013
.055	.049	.046	.041	.038	.034	.031	.029	.026	.023	.022	.020	.017
3/32	.071	.062	.058	.052	.047	.042	.039	.035	.032	.028	.026	.024
7/64	.086	.075	.069	.062	.056	.050	.046	.042	.038	.033	.031	.029
1/4	.101	.089	.081	.072	.065	.058	.053	.048	.043	.038	.033	.030
9/32	.116	.100	.092	.082	.074	.066	.060	.055	.049	.043	.040	.037
5/16	.132	.113	.104	.090	.083	.074	.068	.061	.055	.048	.045	.042
3/8	.162	.138	.127	.112	.101	.090	.082	.074	.066	.058	.054	.050
7/16	.192	.163	.150	.133	.119	.106	.097	.087	.078	.069	.064	.059
1/2	.223	.188	.173	.153	.137	.122	.111	.100	.090	.079	.073	.068
9/16	.253	.214	.196	.173	.155	.138	.126	.114	.101	.089	.083	.077
5/8	.283	.239	.220	.193	.174	.153	.140	.126	.113	.099	.092	.085
3/4	.344	.290	.266	.234	.210	.185	.169	.152	.136	.119	.111	.102
7/8	.405	.340	.312	.274	.246	.217	.198	.178	.159	.139	.130	.120
1	.466	.391	.358	.315	.282	.249	.227	.204	.182	.160	.148	.137
5/8	.526	.441	.404	.355	.318	.281	.256	.231	.205	.....	.....	.....
1/4	.587	.492	.451	.396	.354	.313	.285	.257	.228	.....	.....	.....
3/8	.648	.543	.497	.436	.390	.344	.313	.282	.252	.....	.....	.....
1/2	.708	.593	.544	.477	.427	.376	.342	.309	.275	.....	.....	.....
5/8	.769	.644	.590	.517	.463	.408	.372	.335	.....	.....	.....	.....

For weights of other metals use Conversion Factors on pages 250 and 251

OVERSIZED MONEL-NICKEL
STAINLESS STEEL

DATA

WEIGHTS PER FOOT — SEAMLESS BRASS TUBING (Continued)

SIZE O.D. in Inches	THICKNESS OF WALL BY STUBS GAUGE AND DECIMAL EQUIVALENT IN INCHES — POUNDS PER LINEAL FOOT																
	.19 .042	.20 .035	.21 .032	.22 .028	.23 .025	.24 .022	.25 .020	.26 .018	.27 .016	.28 .014	.29 .013	.30 .012	.31 .010	.32 .009	.33 .008	.34 .007	.35 .006	.36 .005
1 1/4	.830	.694	.636	.558	.499	.440	.400	.361	.....	.....	.....	.....	.....	.....	.....	.....	.....
7/8	.891	.745	.682	.598	.535	.472	.429	.387	.....	.....	.....	.....	.....	.....	.....	.....	.....
2	.951	.796	.729	.639	.571	.503	.458	.413	.....	.....	.....	.....	.....	.....	.....	.....	.....
3/4	1.073	.897	.821	.720	.644	.567	.516	.471	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/2	1.194	.988	.914	.801	.716	.631	.574	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5/8	1.316	1.099	1.006	.882	.788	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	1.437	1.201	1.099	.963	.861	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/4	1.559	1.302	1.191	1.044	.933	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/2	1.680	1.403	1.284	1.125	1.005	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3/4	1.802	1.504	1.377	1.206	1.077	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4	1.923	1.606	1.469	1.287	1.127	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/4	2.045	1.707	1.562	1.368	1.199	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1/2	2.166	1.808	1.654	1.449	1.288	1.909	1.747	1.588	1.428	1.268	1.108	9.50	8.50	7.50	6.50	5.50	4.50
5	2.409	2.011	1.839	1.657	1.495	1.333	1.171	1.009	8.40	7.30	6.20	5.10	4.00	3.00	2.00	1.00	.....
1/4	2.531	2.112	1.932	1.750	1.588	1.426	1.264	1.102	9.80	8.70	7.60	6.50	5.40	4.30	3.20	2.10	1.00
1/2	2.652	2.213	2.024	1.842	1.680	1.518	1.356	1.194	10.20	9.10	8.00	6.90	5.80	4.70	3.60	2.50	1.40
3/4	2.774	2.314	2.125	1.943	1.781	1.619	1.457	1.295	10.60	9.50	8.40	7.30	6.20	5.10	4.00	2.90	1.80
6	2.895	2.416	2.226	2.044	1.882	1.720	1.558	1.396	11.00	10.00	8.90	7.80	6.70	5.60	4.50	3.40	2.30
1/4	3.017	2.517	2.337	2.155	1.993	1.831	1.669	1.507	11.40	10.30	9.20	8.10	7.00	5.90	4.80	3.70	2.60
1/2	3.138	2.618	2.438	2.256	2.094	1.932	1.770	1.608	11.80	10.70	9.60	8.50	7.40	6.30	5.20	4.10	3.00
3/4	3.260	2.720	2.540	2.358	2.196	2.034	1.872	1.710	12.20	11.10	10.00	8.90	7.80	6.70	5.60	4.50	3.40
7	3.381	2.831	2.651	2.469	2.307	2.145	1.983	1.821	12.60	11.50	10.40	9.30	8.20	7.10	6.00	4.90	3.80

TO DETERMINE THE WEIGHT OF TUBING OF OTHER METALS,
MULTIPLY THE WEIGHT OF BRASS BY THE FOLLOWING FACTORS:

2017 ALUMINUM	—	.337
90% COMMERCIAL BRONZE	—	1.04
COPPER	—	1.05
85% LOW BRASS	—	1.03
MONEL	—	1.05
NICKEL	—	1.05
18% NICKEL SILVER	—	1.03
5% PHOSPHOR BRONZE	—	1.03
STEEL	—	.94

WEIGHTS

ROUND TUBES — WEIGHTS BY INSIDE DIAMETERS

To determine the weight per foot of a tube of a given **inside** diameter; — to the weight given for the size and gauge by O.D. in the preceding table, add the weight given below for the corresponding thickness of wall by Stubs Gauge. The sum will be the weight in pounds per lineal foot by **inside** diameter.

**Thickness of Wall by Stubs Gauge — Pounds to be Added
to O.D. Weight**

1	2	3	4	5	6	7	8	9
2.08	.187	1.55	1.31	1.12	.954	.750	.630	.507
10	11	12	13	14	15	16	17	18
.416	.333	.275	.209	.159	.120	.098	.078	.056
19	20	21	22	23	24	25	26	27
.041	.028	.024	.018	.014	.011	.009	.008	.006
28	29	30	31	32	33	34	35	36
.005	.004	.003	.002	.002	.001	.001	.0006	.0004

CALCULATING WEIGHT OF ROUND TUBES

To Determine the Weight in Pounds per Lineal Foot of a Seamless Tube:

When O.D. is given:

- Subtract wall thickness from O.D.
- Multiply by gauge
- Multiply by —
 - 11.5736 for Brass
 - 12.1768 for Copper

When I.D. is given:

- Add wall thickness to I.D.
- Multiply by gauge
- Multiply by —
 - 11.5736 for Brass
 - 12.1768 for Copper

The above factors are arrived at by using a density of 0.037 pound per cubic inch for Yellow Brass and 0.323 pound per cubic inch for Deoxidized Copper.

STAINLESS STEEL
WELDING MANUAL

CONVERSION FACTORS

DATA

WEIGHTS

STEEL TUBING WEIGHT FORMULAS

All weights are theoretical and predicated upon a cubic inch of steel weighing .2833 pound. Actual shipping weights may vary somewhat from these theoretical weights due to variations encountered in manufacturing practices.

Round Seamless

$$W = 10.68 (D - t) t$$

W = weight in pounds per foot

D = outside diameter in inches and decimals of an inch

t = wall thickness in decimals of an inch

Square Seamless

$$W = 13.60 (D - t) t$$

W = weight in pounds per foot

D = outside diameter in inches and decimals of an inch measured at right angles to the sides

t = wall thickness in decimals of an inch

Rectangular Seamless

$$W = 6.7992 (A + B - 2t) t$$

W = weight in pounds per foot

A and B = the two outside dimensions in inches measured at right angles to the sides

t = wall thickness in decimals of an inch

Conversion Formulas

Monel = steel weight $\times 1.126$

Nickel = steel weight $\times 1.133$

Inconel = steel weight $\times 1.084$

Copper = steel weight $\times 1.140$

**Approximate Weights of 100 Lineal Feet
Cold Rolled Strip Steel 1" Wide**

Thickness inches	Wt. lbs.	Thickness inches	Wt. lbs.	Thickness inches	Wt. lbs.	Thickness inches	Wt. lbs.
.010	3.4	.022	7.5	.049	16.7	.095	32.3
.012	4.1	.025	8.5	.050	17.0	.109	37.2
.013	4.4	.028	9.5	.058	19.7	.120	40.8
.014	4.8	.031	10.6	.062	21.1	.125	42.5
.015	5.1	.032	10.9	.065	22.1	.134	45.6
.016	5.4	.035	11.9	.072	24.5	.148	50.3
.018	6.1	.038	12.9	.078	26.6	.165	56.1
.019	6.5	.042	14.3	.083	28.2	.180	61.3
.020	6.8	.044	15.0	.094	31.9	.187	63.8
						.250	85.0

WEIGHTS

SYSTEMS OF WEIGHTS

UNITED STATES AND BRITISH. THE GRAIN IS THE UNIT.

1 GRAIN = .0647987 GRAMS

AVOIRDUPOIS

NET TON = 2000 POUNDS

= .892857 GROSS TONS

GROSS TON = 2,240 POUNDS

HUNDREDWEIGHT = 112 POUNDS

POUND = 1.215278 TROY POUNDS

STONE = .125 CWT.

Grains	Drams	Ounces	Pounds
1.	.03657	.002286	.000143
27.34375	1.	.0625	.003906
437.5	16.	1.	.0625
7.000.	256.	16.	1.

TROY

1 TROY OUNCE = 1.097143 AVOIRDUPOIS OUNCES

175 TROY OUNCES = 192 AVOIRDUPOIS OUNCES

1 POUND TROY = .822857 POUNDS AVOIRDUPOIS

Grains	Pennyweight	Ounces	Pounds
1	.041667	.0020833	.0001736
24	1.	.05	.0041667
480	20.	1.	.0833333
5760	240.	12.	1.

WEIGHTS OF CIRCLES

The Circumference and Areas of Circles tables on pages 340 to 345 can be used to determine quickly the weights of circles. Simply multiply the AREA in SQUARE FEET by the weight per square foot (see pages 229 and 234) of the metal.

For example, if you want the weight of a $\frac{1}{8}$ " thick, 23" diameter brass circle . . .

MULTIPLY 5.508 pounds (weight per square foot of
 $\frac{1}{8}$ " brass)

BY 2.8853 (area in Square Feet)

— 15.892 + pounds

STAINLESS STEEL

ONVERSION FACTORS

MONEL-NICKEL

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MA

WEIGHTS

WEIGHT CONVERSION FACTORS

Based On Pure Aluminum
(1100) — Density 2.71

Weight .0979 Lbs. Per Cu. Inch

3003	=	1.01 TIMES WEIGHT OF 1100 ALUMINUM
ALCLAD 3003	=	1.01 TIMES WEIGHT OF 1100 ALUMINUM
2011	=	1.04 TIMES WEIGHT OF 1100 ALUMINUM
2017	=	1.03 TIMES WEIGHT OF 1100 ALUMINUM
2024	=	1.02 TIMES WEIGHT OF 1100 ALUMINUM
ALCLAD 2024	=	1.02 TIMES WEIGHT OF 1100 ALUMINUM
4043	=	.98 TIMES WEIGHT OF 1100 ALUMINUM
5005	=	.99 TIMES WEIGHT OF 1100 ALUMINUM
5050	=	.99 TIMES WEIGHT OF 1100 ALUMINUM
5052	=	.99 TIMES WEIGHT OF 1100 ALUMINUM
6061	=	1.00 TIMES WEIGHT OF 1100 ALUMINUM
6062	=	1.00 TIMES WEIGHT OF 1100 ALUMINUM
6063	=	1.00 TIMES WEIGHT OF 1100 ALUMINUM
7075	=	1.03 TIMES WEIGHT OF 1100 ALUMINUM
ALCLAD 7075	=	1.03 TIMES WEIGHT OF 1100 ALUMINUM
BRASS	=	3.10 TIMES WEIGHT OF 1100 ALUMINUM
COPPER	=	3.30 TIMES WEIGHT OF 1100 ALUMINUM
MONEL	=	3.24 TIMES WEIGHT OF 1100 ALUMINUM
NICKEL	=	3.26 TIMES WEIGHT OF 1100 ALUMINUM
STEEL	=	2.89 TIMES WEIGHT OF 1100 ALUMINUM
ZINC	=	2.62 TIMES WEIGHT OF 1100 ALUMINUM

WEIGHT CONVERSION FACTORS (Continued)

Based on Brass — Density 8.46
Weight .306 Lbs. Per Cu. Inch

COMMERCIAL BRONZE

(90%)	=	1.039 XWEIGHT OF BRASS
COPPER	=	1.052 XWEIGHT OF BRASS
LOW BRASS (80%)	=	1.023 XWEIGHT OF BRASS
LOW BRASS (85%)	=	1.033 XWEIGHT OF BRASS
MONEL	=	1.063 XWEIGHT OF BRASS
NICKEL	=	1.07 XWEIGHT OF BRASS
NICKEL SILVER (18%)	=	1.033 XWEIGHT OF BRASS
PHOSPHOR BRONZE (5%)	=	1.046 XWEIGHT OF BRASS
TOBIN BRONZE	=	0.994 XWEIGHT OF BRASS
INCONEL	=	1.023 XWEIGHT OF BRASS
NICKEL CLAD STEEL (10% CLAD)	=	1.045 XWEIGHT OF BRASS
MUNTZ METAL	=	1.00 XWEIGHT OF BRASS
ARCHITECTURAL BRONZE	=	1.00 XWEIGHT OF BRASS
STEEL	=	0.94 XWEIGHT OF BRASS
1100 ALUMINUM	=	0.324 XWEIGHT OF BRASS
2017 ALUMINUM	=	0.337 XWEIGHT OF BRASS

Continued on next page

WEIGHTS

WEIGHT CONVERSION FACTORS (Continued)

Weight of Metals per Cubic Inch

ALUMINUM — WROUGHT

(1100)	=	.0979 LBS. PER CUBIC INCH
ALUMINUM — CAST	=	.0924 LBS. PER CUBIC INCH
BRASS	=	.306 LBS. PER CUBIC INCH
CAST IRON	=	.260 LBS. PER CUBIC INCH
COPPER	=	.318 LBS. PER CUBIC INCH
INCONEL	=	.307 LBS. PER CUBIC INCH
LEAD	=	.411 LBS. PER CUBIC INCH
MAGNESIUM	=	.0629 LBS. PER CUBIC INCH
MONEL	=	.319 LBS. PER CUBIC INCH
NICKEL	=	.321 LBS. PER CUBIC INCH
STEEL	=	.293 LBS. PER CUBIC INCH
ZINC	=	.2598 LBS. PER CUBIC INCH

WEIGHT CONVERSION FACTORS (Continued)

Conversion Factors of Inco Alloys Based on Monel — Density 8.80

DURANICKEL ALLOY 301	=	.934 X WEIGHT OF MONEL
INCOLOY ALLOY 800	=	.909 X WEIGHT OF MONEL
INCONEL ALLOY 600	=	.953 X WEIGHT OF MONEL
INCONEL ALLOY X-750	=	.934 X WEIGHT OF MONEL
MONEL ALLOY 403	=	1.003 X WEIGHT OF MONEL
MONEL ALLOY K-500	=	.956 X WEIGHT OF MONEL
MONEL ALLOY 501	=	.956 X WEIGHT OF MONEL
MONEL ALLOY R-405	=	1.00 X WEIGHT OF MONEL
NICKEL 200	=	1.006 X WEIGHT OF MONEL
NI-O-NEL ALLOY 825	=	.922 X WEIGHT OF MONEL

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STAINLESS STEEL

CONVERSION FACTORS

MONEL-NICKEL

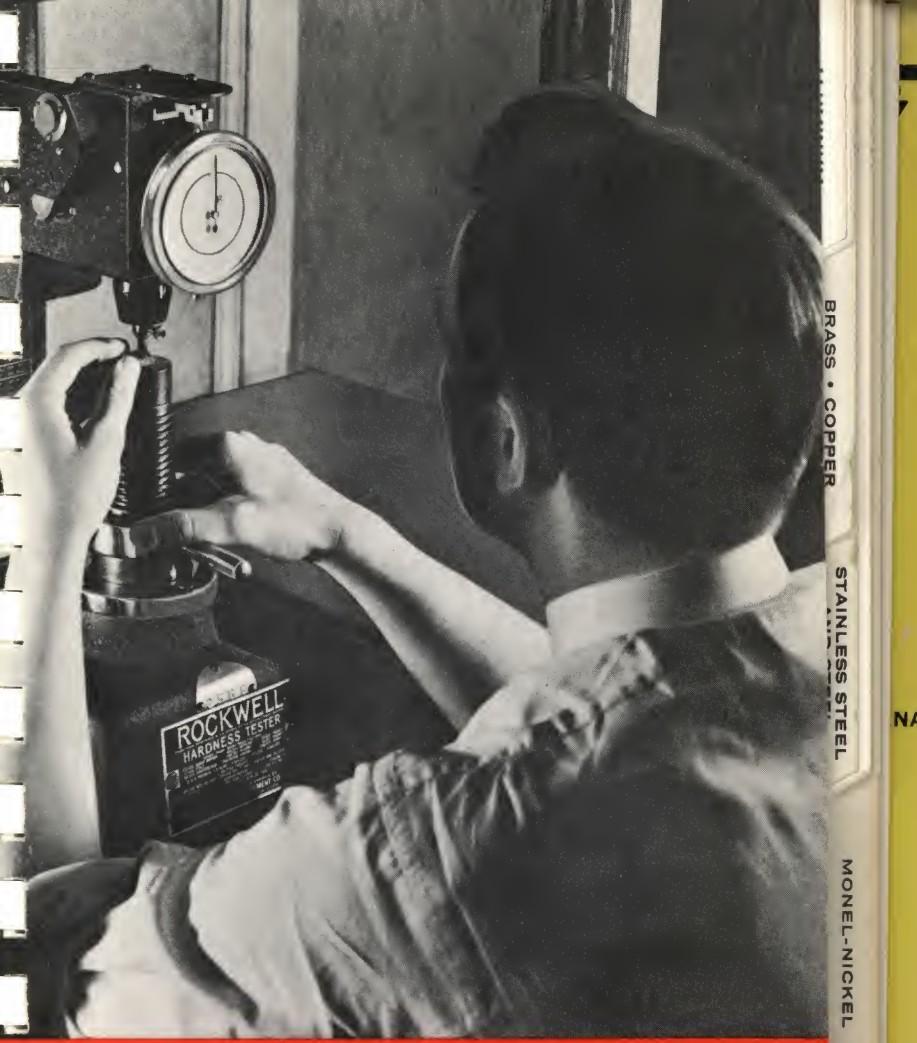
DATA

WEIGHTS

WEIGHT CONVERSION FACTORS

Based on Carbon Steel
40.8 Lbs. per sq. ft. per
inch of thickness

Alloy or Metal	Factor	Alloy or Metal	Factor
ALUMINUM			
1100 ALLOY.....	.34602	BRASS.....	1.07266
2011 ".....	.35986	COPPER.....	1.14187
2017 ".....	.35640	MONEL.....	1.14187
2024 ".....	.35294	NICKEL.....	1.12803
3003 ".....	.34948	STEEL, CARBON.....	1.00000
4043 ".....	.34360	STEEL, STAINLESS	
5052 ".....	.34256	300 SERIES.....	1.02941
5056 ".....	.33702	400 SERIES.....	1.00980
6053 ".....	.34360	TIN.....	.93079
6061 ".....	.34602	ZINC.....	.89965
6151 ".....	.34256		
7075 ".....	.35640		
7178 ".....	.35640		



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STAINLESS STEEL

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DATA

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MA

WHAT DO YOU

WANT TO KNOW ABOUT

METALS

This data section includes many frequently used tables and charts on metals, plus general definitions on alloys. Because of space limitations, much technical information has been omitted. However, our literature library contains a wealth of technical information produced by many of the nation's leading suppliers. If you do not find the information you want in this book, call our nearest warehouse sales office. We will be happy to assist you.

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An extensive library of technical literature on metals is available to you, free of charge. Just call our nearest warehouse sales office and tell them what information you want.

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ALUMINUM AND ITS ALLOYS

Aluminum's weight is about one-third that of other commonly-used metals. It is highly-resistant to the corrosive action of the atmosphere and many chemical compounds. It has high thermal and electrical conductivity. It reflects radiant energy, ranging from the short wave lengths of ultra-violet to the long waves of heat, electromagnetic, and radio. In addition, aluminum fabricates easily. It can be welded by all commercial methods.

The compounds comprising aluminum are colorless, and cause no harmful action on the human system. Ordinarily, aluminum is inert. But it can be made into a strong reducing agent by heating to very high temperatures, or by introducing certain chemicals, especially strong alkalis. When made into a reducing agent, aluminum is used to reduce refractory metals from their ores, and remove gases from molten steel.

ALCOA ALUMINUM ALLOYS are formed by combining commercially pure aluminum with small amounts of other metals. Each alloy is designed to have certain characteristics that make it superior to other alloys for specific applications. Since it is important for designers and aluminum users to have information readily available on the qualities of the various alloys, the following pages contain short explanations on each alloy.*

There are two classes of Alcoa Aluminum Wrought Alloys:

- 1 Nonheat-treatable alloys, whose harder tempers are developed by strain hardening (cold work). Included in this group are Alloys 1100, 3003, 5052.
- 2 Alloys whose harder tempers are produced by heat treatment. This group consists of Alloys 2017, 2024, 6053, 7075.

Both groups have a wide range of tensile properties. However, the highest combinations of strength and ductility appear in the heat-treated group.

* A detailed booklet on this subject, "ALCOA ALUMINUM AND ITS ALLOYS", is yours for the asking. Send your request to our nearest warehouse or sales service office.

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AND STEEL

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ALUMINUM AND ITS ALLOYS (Continued)

NOMINAL COMPOSITION OF WROUGHT ALUMINUM ALLOYS*

Alloy	Per Cent of Alloying Elements — Aluminum and Normal Impurities							Constitute Remainder		
	Copper	Silicon	Manganese	Magnesium	Zinc	Nickel	Chromium	Lead	Bismuth	.....
99.45% MINIMUM ALUMINUM 99.0% MINIMUM ALUMINUM										
EC 1100	.....	.....	1.2	.....	.....	.....	.....	.....	.....	.....
3003†	.....	.....	1.2	1.0	.....	.....	.....	.....	.....	.....
3004†	.....	.....	1.2	.....	.....	.....	.....	.....	0.5	0.5
2011	5.5	.....	.....	.....	.....	.....	.....	.....	.....	.....
2014†	4.4	0.8	0.8	0.4	.....	.....	.....	.....	.....	.....
2017	4.0	.....	0.5	0.5	.....	.....	.....	.....	.....	.....
2117	2.5	.....	.....	0.3	.....	.....	.....	.....	.....	.....
2018	4.0	.....	.....	0.6	.....	.....	2.0	.....	.....	.....
2218	4.0	.....	.....	1.5	.....	1.5	2.0	.....	.....	.....
2024†	4.5	.....	.....	0.6	1.5	.....	.....	.....	.....	.....
2025	4.5	0.8	0.8	0.8	.....	.....	.....	.....	.....	.....
4032	0.9	12.2	.....	1.1	.....	0.9	.....	.....	.....	.....
4043	.....	5.0	.....	.....	.....	.....	.....	.....	.....	.....
5050	.....	.....	.....	1.2	.....	.....	.....	.....	.....	.....
6115†	.....	1.0	.....	0.6	.....	0.25	.....	.....	.....	.....
5052	.....	.....	.....	2.5	.....	0.25	.....	.....	.....	.....
6053	.....	0.7	.....	1.3	.....	0.25	.....	.....	.....	.....
5056	0.1	5.2	0.1
6061	0.25	0.6	0.6	1.0	0.25
6062	0.25	0.6	0.6	1.0
6063	0.4	0.4	0.7
7072	1.0
7075†	1.6	5.6	0.3

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*Heat-treatment symbols have been omitted since composition does not vary for different heat-treatment practices.

†The Alclad form of these alloys consists of a "core" of the basis alloy coated with pure aluminum or a suitable alloy.

DATA

ALUMINUM AND ITS ALLOYS (Continued)

NOMINAL COMPOSITION OF CASTING ALLOYS¹

Alloy	Per Cent of Alloying Elements — Aluminum and Normal Impurities Constitute Remainder				
	Copper	Silicon	Magnesium	Zinc	Nickel
99%	.....	.....	.....	.....	.....
13	.....	12.0	.....	.....	.....
43	.....	5.0	.....	.....	.....
85	4.0	5.0	.....	.....	.....
108	4.0	3.0	.....	.....	.....
112	7.0	.....	.....	1.7	.....
113	7.0	2.0	.....	1.7	.....
122	10.0	.....	0.2	.....	.....
142	4.0	.....	1.5	.....	2.0
195	4.5	0.8	.....	.....	.....
212	8.0	1.2	.....	.....	.....
214	.....	.....	3.8	.....	.....
B214	.....	1.8	3.8	.....	.....
F214	.....	0.5	3.8	.....	.....
218	.....	.....	8.0	.....	.....
220	10.0
319	3.5	6.3
355	1.3	5.0	0.5
356	7.0	0.3
360 ²	9.5	0.5
380 ²	3.5	9.0
384	3.8	12.0
A612	0.5	0.7	6.5

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1. Heat-treatment symbols have been omitted since composition does not vary for different heat-treatment practices — see "Alcoa Aluminum and Its Alloys" for composition limits.
2. The alloys A360 and A380 have the same nominal compositions as 360 and 380, respectively, but the impurities, notably iron, are controlled to closer limits.

NONHEAT-TREATABLE ALLOYS

1100 and 3003

These alloys are commonly specified for applications that do not require high strength. In any given temper, 1100 forms slightly easier than 3003. However, because 3003 has greater strength, it is often used instead of 1100, even though minor changes in design and tools may be necessary to permit economical manufacture. Both 1100 and 3003 are used to manufacture drawn cooking utensils, bottles and glass closures, cosmetic containers, and other similar articles. The temper of 1100 or 3003 sheet may vary from "soft" to three-quarter hard, depending upon the depth of the draw. A half-hard temper is frequently specified.

5052

5052 is stronger than 3003. In quarter-hard temper (5052-H32), it has good forming qualities. Its mechanical properties are, also, somewhat higher than 3003's in the hard-temper (3003-H). These factors, combined with an excellent resistance to corrosion and high endurance limit, make 5052 suitable for many applications which otherwise would require a heat-treatable alloy.

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TYPICAL⁽¹⁾ MECHANICAL PROPERTIES OF WROUGHT ALUMINUM ALLOYS

Alloy and Temper	Tensile Strength Lb./Sq. In.	Yield Strength (Offset = 0.2%), Lb./Sq. In.	Elongation Per Cent in 2 in.		Brinell Hardness, 500-kg. Load 10-mm Ball	Shearing Strength Lb./Sq. In.	Endurance Limit, ⁽²⁾ Lb./Sq. In.
			Sheet Specimen (1/16 in. Thick)	Round Specimen (1/2 in. Diameter)			
99.6-O	10,000	4,000	43	.....	19	7,000	3,000
99.6-H12	12,000	11,000	16	.....	23	8,000	4,000
99.6-H14	14,000	13,000	12	.....	26	9,000	5,000
99.6-H16	16,000	15,000	8	.....	30	10,000	6,500
99.6-H18	19,000	18,000	6	.....	35	11,000	6,500
EC-O	12,000	4,000	.....	.....	.....	.....	.....
EC-H19	27,000	24,000	.....	.....	.....	.....	7,000
1100-O	13,000	5,000	35	45	23	9,500	5,000
1100-H12	15,500	14,000	12	25	28	10,000	6,000
1100-H14	17,500	16,000	9	20	32	11,000	7,000
1100-H16	20,000	18,000	6	17	38	12,000	8,500
1100-H18	24,000	22,000	5	15	44	13,000	8,500
3003-O	16,000	6,000	30	40	28	11,000	7,000
3003-H12	19,000	17,000	10	20	35	12,000	8,000
3003-H14	21,500	19,000	8	16	40	14,000	9,000
3003-H16	25,000	22,000	5	14	47	15,000	9,500
3003-H18	29,000	26,000	4	10	55	16,000	10,000
ALCLAD 3003	26,000	10,000	20	25	.....	16,000	14,000
3004							

DATA

ALUMINUM AND ITS ALLOYS (Continued)

TYPICAL (1) MECHANICAL PROPERTIES OF WROUGHT ALUMINUM ALLOYS (Continued)

Alloy and Temper	Tensile Strength Lb./Sq. In.	Yield Strength (Offset = 0.2%), Lb./Sq. In.	Elongation Per Cent in 2 in.		Sheet Specimen (1/16 in. Thick)	Round Specimen (1/2 in. Diameter)	Brinell Hardness, 500-kg. Load 10-mm Ball	Shearing Strength Lb./Sq. In.	Endurance Limit (2) Lb./Sq. In.
			Sheet Specimen (1/16 in. Thick)	Round Specimen (1/2 in. Diameter)					
3004-H32	31,000	22,000	10	17	52	17,000	14,500	18,000	15,000
3004-H34	34,000	27,000	9	12	63	18,000	15,000	20,000	15,500
3004-H36	37,000	31,000	5	9	70	21,000	16,000	21,000	18,000
3004-H38	40,000	34,000	5	6	77	32,000	18,000	34,000	18,000
ALCLAD 3004			PROPERTIES SUBSTANTIALLY SAME AS FOR 3004		15	95	35,000	18,000	35,000
2011-T3(4)	55,000	48,000	.....	.....	17	97	42,000	18,000	42,000
2011-T6	57,000	39,000	.....	.....	12	100	45,000	18,000	45,000
2011-T8	59,000	45,000	.....	.....	18	45	48,000	13,000	48,000
2014-O	27,000	14,000	.....	.....	20	105	38,000	20,000	38,000
2014-T4	62,000	40,000	.....	.....	13	135	42,000	18,000	42,000
2014-T6	70,000	60,000	.....	.....	.....	.....	18,000	18,000	18,000
ALCLAD 2014-O	25,000	10,000	21	.....	.....	.....	37,000	18,000	37,000
ALCLAD 2014-T3	63,000	40,000	20	.....	.....	.....	37,000	18,000	37,000
ALCLAD 2014-T4	61,000	37,000	22	.....	.....	.....	41,000	13,000	41,000
ALCLAD 2014-T6	68,000	60,000	11	.....	.....	.....	18,000	18,000	18,000
2017-O	26,000	10,000	.....	.....	22	45	38,000	18,000	38,000
2017-T4	62,000	40,000	.....	.....	22	105	28,000	13,500	28,000
2117	43,000	24,000	.....	.....	27	70	39,000	17,000	39,000
2018-T61	61,000	46,000	12	120	17,000	17,000	17,000

See footnotes, page 260.

Continued on next page

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ALUMINUM AND ITS ALLOYS (Continued)

TYPICAL^① MECHANICAL PROPERTIES OF WROUGHT ALUMINUM ALLOYS (Continued)

Alloy and Temper	Tensile Strength Lb./Sq. In.	Yield Strength (Offset = 0.2% ^②) Lb./Sq. In.	Elongation Per Cent in 2 in.		Round Specimen (1/16 in. Thick)	Brinell Hardness, 500-kg. Load 10-mm Ball	Shearing Strength Lb./Sq. In.	Endurance Limit, ^③ Lb./Sq. In.
			Sheet Specimen (1/16 in. Thick)	Specimen (1/16 in. Diameter)				
2218-T72	48,000	37,000	.....	11	9.5	30,000	.....	.....
2024-O	27,000	11,000	19	22	4.7	18,000	13,000	13,000
2024-T3	70,000	50,000	18	.....	120	41,000	20,000	20,000
2024-T4	68,000 ⁽⁵⁾	48,000	20	19	120	41,000	20,000	20,000
2024-T36	72,000	57,000	14	.....	130	42,000	18,000	18,000
ALCLAD 2024-O	26,000	11,000	19	.....	.....	18,000	.....	.....
ALCLAD 2024-T3	64,000	44,000	18	.....	.....	40,000	.....	.....
ALCLAD 2024-T4	64,000	42,000	19	.....	.....	40,000	.....	.....
ALCLAD 2024-T36	67,000	53,000	11	.....	.....	41,000	.....	.....
ALCLAD 2024-T81	65,000	60,000	6	.....	.....	.....	.....	.....
ALCLAD 2024-T86	70,000	66,000	6	.....	.....	.....	.....	.....
2025-T6	58,000	37,000	.....	19	110	35,000	18,000	18,000
4032-T6	55,000	46,000	.....	9	120	38,000	16,000	16,000
5005-O	18,000	6,000	30	.....	28	11,000	.....	.....
5005-H34	23,000	20,000	8	.....	41	14,000	.....	.....
5050-O	21,000	8,000	24	.....	36	14,000	.....	.....
5050-H32	24,500	21,000	9	.....	45	16,000	.....	.....
5050-H34	27,500	24,000	8	.....	50	17,000	.....	.....
5050-H36	29,500	26,000	7	.....	54	18,000	.....	.....
5050-H38	31,000	28,000	6	.....	57	19,000	.....	.....
6151-T6	48,000	43,000	.....	17	100	32,000	11,000	11,000

DATA

ALUMINUM AND ITS ALLOYS (Continued)

TYPICAL⁽¹⁾ MECHANICAL PROPERTIES OF WROUGHT ALUMINUM ALLOYS (Continued)

Alloy and Temper	Tensile Strength Lb./Sq. In.	Yield Strength (Offset = 0.2%), Lb./Sq. In.	Elongation Per Cent in 2 in.		Brinell Hardness, 500-kg. Load 10-mm Ball	Shearing Strength Lb./Sq. In.	Endurance Limit, ⁽²⁾ Lb./Sq. In.
			Sheet Specimen (1/16 in. Thick)	Round Specimen (1/2 in. Diameter)			
5052-O	27,000	12,000	25	30	45	18,000	17,000
5052-H32	34,000	27,000	12	18	62	20,000	17,500
5052-H34	37,000	31,000	10	14	67	21,000	18,000
5052-H36	39,000	34,000	8	10	74	23,000	18,500
5052-H38	41,000	36,000	7	8	85	24,000	19,000
6053-O	16,000	8,000	.....	35	26	11,000	8,000
6053-T4	30,000	20,000	.....	21	62	18,000	13,000
6053-T5	27,000	21,000	.....	15	60	17,000	.....
6053-T6	37,000	32,000	.....	13	80	23,000	13,000
5056-O	42,000	22,000	.....	35	.....	26,000	20,000
5056-H18	63,000	59,000	.....	10	.....	34,000	22,000
5056-H38	60,000	50,000	.....	15	.....	32,000	.....
6061-O	18,000	8,000	22	30	30	12,500	9,000
6061-T4	35,000	21,000	22	25	65	24,000	13,500
6061-T6	45,000	40,000	12	17	95	30,000	13,500
6062-O	17,000	6,500	.....	30	28	12,000	8,500
6062-T4	35,000	21,000	.....	25	65	24,000	13,500
6062-T6	45,000	40,000	17	95	30,000	13,500
6063-T42	22,000	13,000	20	42	14,000	9,500

See footnotes, page 260.

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ALUMINUM AND ITS ALLOYS (Continued)

TYPICAL^① MECHANICAL PROPERTIES OF WROUGHT ALUMINUM ALLOYS (Continued)

Alloy and Temper	Tensile Strength Lb./Sq. In.	Yield Strength (Offset = 0.2%), Lb./Sq. In.	Elongation Per Cent in 2 in.		Brinell Hardness, 500-kg. Load, 10-mm Ball	Shearing Strength Lb./Sq. In.	Endurance Limit, ^② Lb./Sq. In.
			Sheet Specimen (1/16 in. Thick)	Round Specimen (1/2 in. Diameter)			
6063-T5	27,000	21,000	12	.....	60	17,000	9,500
6063-T6	35,000	31,000	12	.....	73	22,000	9,500
6063-T83	38,000	36,000	10	.....	82	.....	.....
6063-T831	32,000	29,000	10	.....	70	.....	.....
6063-T832	45,000	40,000	10	.....	95	.....	.....
6262-T9	58,000	55,000	10	.....	120	35,000	13,000
7075-O	33,000	15,000	17	16	60	22,000	.....
7075-T6 ^③	82,000	72,000	11	11	150	49,000	24,000
ALCLAD 7075-O	32,000	14,000	17	.....	.....	22,000	.....
ALCLAD 7075-T6	76,000	67,000	11	.....	.....	46,000	.....

① The values given in this table are averages which take into account the variations introduced by size, shape or method of manufacture. For guaranteed minimum values, see "Alcoa Aluminum and Its Alloys".

② Based on 500,000,000 cycles of completely reversed stress using the R. R. Moore type machine and specimen.

③ This material is commonly used in wire sizes for which the typical elongation in 10 inches is about 23 per cent for EC-O and 1.5 per cent for EC-H19.

④ For sizes up to 1 1/2 inches. For larger sizes, the strengths will be somewhat lower.

⑤ The strengths of extrusions more than about 3/4 inch thick will be 15 to 20 per cent higher.

⑥ The values given are for sheet. Extrusions will have strengths about 8 to 10 per cent higher.

DATA

ALUMINUM AND ITS ALLOYS (Continued)

HEAT-TREATABLE ALLOYS

Heat-treatable alloys offer a wide range of properties to meet the many requirements of structural applications.

2017

2017 is the oldest of the heat-treatable alloys. Although it has largely been replaced by 2024 in applications requiring strengths, it is still used in many cases where light weight is a factor, and a strength comparable to that of steel is sufficient.

2024

2024 is similar to 2017 in composition and in many of its characteristics. But it is stronger. In fact, until the development of 7075, 2024 was the strongest aluminum alloy commercially available. 2024 is produced in practically all commercial forms. It is available, also, as an Alclad product in sheet and plate. Because of their high strengths, 2024 and Alclad 2024 are the principal alloys used in aircraft production.

7075

7075 is a high-strength alloy. 7075-T6 (solution heat-treated and then artificially aged) has a very high tensile and yield strength, but cannot be formed as readily as 2024-T6. The workability of 7075-O (in the annealed condition) is as good as 2024-O. If 7075-T4 (solution heat-treated) is formed within a few days after quenching, it forms more easily than 2024-T4. And if the forming is delayed for a longer period of time, it still forms as easily as 2024-T4. 7075 can be heated for several hours at 350° F. to permit hot forming, without reducing its strength or resistance to corrosion. The endurance limit of 7075-T6 is the highest of any of the wrought aluminum alloys.

6053 and 6061

Both 6053 and 6061 are characterized by moderately high strength, good formability and high resistance to corrosion. However, 6061 has slightly higher strength and somewhat better formability. As a result, 6061 is used more frequently and is commercially available in more commodities than 6053. Both alloys age harden to some extent at room temperature. But in the "solution heat-treated temper" (T4), they can take severe forming even after several weeks storage. Maximum strengths are reached by aging the heat-treated materials at an elevated temperature. Temper does not significantly affect the ability of either 6053 or 6061 to resist corrosive attack. Therefore, rapid quenching is not as important as with 2024 or 7075 (except as slow quenches may lower the properties). In addition, a modified heat-treatment to secure special combinations of properties can be used on either 6053 or 6061 without reducing their ability to resist corrosion.

2011

2011 has very good "free-cutting" machining properties. Its other mechanical properties are comparable to 2017-T4. When produced in the modified heat treatment, 2011-T3 is excellent screw machine stock. Experience has proven the machining quality of this stock as being equal to that of the free-cutting alloys of other metals commonly used for automatic screw machines.

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DATA**ALUMINUM AND ITS ALLOYS (Continued)****ALCLAD PRODUCTS**

Alclad is the name given to alloy products with an aluminum or an aluminum alloy surface which has been fused to, and made integral with, the base metal core.

In most cases, the purpose of the surface layer is to afford increased resistance to corrosion. The thickness of this surface layer is kept at the minimum required for adequate protection. As a result, the composite product retains the maximum of physical properties. For thick sheet and plate, the thickness of the surface layers is a smaller percentage of the total thickness than for thin sheets.

TOOL AND JIG PLATE

Alcoa Tool and Jig Plate is cast. Both sides are machined. It is given stress relief treatment to assure dimensional stability for machining. Tool and Jig Plate is free of porosity, inclusions, blows and other injurious metallurgical defects.

ADDITIONAL INFORMATION

The Aluminum Company of America has prepared many informative, technical booklets on aluminum and how to work it. This literature is free. To get copies, call or write our nearest warehouse or sales office, stating the type of information you want.

TYPICAL PHYSICAL PROPERTIES OF WROUGHT ALLOYS

Alloy	Specific Gravity	Weight Lb. per Cu. In.	Approximate Melting Range, Degrees F.	Electrical Conductivity Per Cent of International Annealed Copper Standard	Thermal Conductivity at 25° C., C.G.S. Units
EC-O } EC-H19 }	2.70	0.098	1195-1215	62	0.56
1100-O } 1100-H18 }	2.71	0.098	1190-1215	{ 59 57	0.53 0.52
3003-O } 3003-H18 }	2.73	0.099	1190-1210	{ 50 40	0.46 0.37
3004-O } 3004-H38 }	2.72	0.098	1165-1205	{ 42 42	0.39 0.39
2011-T3	2.82	0.102	995-1190	40	0.37
2014-O } 2014-T6 }	2.80	0.101	950-1180	{ 50 40	0.46 0.37
2017-O } 2017-T4 }	2.79	0.101	955-1185	{ 45 30	0.41 0.29

Continued on next page

DATA

ALUMINUM AND ITS ALLOYS (Continued)

TYPICAL PHYSICAL PROPERTIES OF WROUGHT ALLOYS (Continued)

Alloy	Specific Gravity	Weight Lb. per Cu. In.	Approximate Melting Range, Degrees F.	Electrical Con- ductivity Per Cent of Inter- national Annealed Copper Standard	Thermal Con- ductivity at 25° C., C.G.S. Units
2117-T4	2.74	0.099	950-1200	40	0.37
2018-O } 2018-T61 }	2.82	0.102	945-1180	{ 50 40	0.46 0.37
2218-T72	2.80	0.101	1005-1170	44	0.41
2024-O } 2024-T3 }	2.77	0.100	935-1180	{ 50 30	0.45 0.29
2025-T6	2.79	0.101	970-1185	40	0.37
4032-O } 4032-T6 }	2.69	0.097	990-1060	{ 40 35	0.37 0.33
5005-O } 5005-H38 }	2.70	0.098	1170-1205	52	0.48
5050-O } 5050-H38 }	2.69	0.097	1160-1205	{ 50 50	0.46 0.46
6151-O } 6151-T4 } 6151-T6 }	2.70	0.098	1025-1200	{ 40 45	0.37 0.41
5052-O } 5052-H38 }	2.68	0.097	1100-1200	{ 35 35	0.33 0.33
6053-O AND T5 } 6053-T4 AND T6 }	2.69	0.097	1075-1205	{ 45 40	0.41 0.37
5056-O } 5056-H18 }	2.64	0.095	1055-1180	{ 29 27	0.28 0.26
6061-O } 6061-T4 AND T6 }	2.70	0.098	1080-1205	{ 45 40	0.41 0.37
6062-O } 6062-T4 AND T6 }	2.70	0.098	1080-1205	{ .. 45	..... 0.41
6063-T42 (FORMERLY "F") } 6063-T5 AND T6 }	2.70	0.098	1140-1205	{ 50 55	0.46 0.50
7075-O } 7075-T6 }	2.80	0.101	890-1180	{ .. 30 0.29

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ALUMINUM AND ITS ALLOYS (Continued)

APPROXIMATE RADII FOR 90° COLD BEND ALUMINUM AND ALUMINUM ALLOY SHEET

Minimum permissible radius varies with nature of forming operation, type of forming equipment, and design and condition of tools. Minimum working radius for a given material or hardest alloy and temper for a given radius can be ascertained only by actual trial under contemplated conditions of fabrication.

Alloy and Temper	Bend Classification ⁽¹⁾	Alloy and Temper	Bend Classification ⁽¹⁾
1100-O	A	2024-O ⁽²⁾	B
1100-H12	B	2024-T3 ⁽²⁾⁽³⁾	J
1100-H14	B	2024-T36 ⁽²⁾	K
1100-H16	D	5005-O	A
1100-H18	F	5005-H34	C
3003-O	A	5052-O	B
3003-H12	B	5052-H32	C
3003-H14	C	5052-H34	D
3003-H16	E	5052-H36	F
3003-H18	G	5052-H38	G
ALCLAD 2014-O	B	6061-O	B
ALCLAD 2014-T3 AND T4	H	6061-T4	E
ALCLAD 2014-T6	K	6061-T6	F
		7075-O	D
		7075-T6 ⁽²⁾	K

⁽¹⁾ For corresponding bend radii, see following table.

⁽²⁾ Alclad sheet can be bent over slightly smaller radii than the corresponding tempers of the uncoated alloy.

⁽³⁾ Immediately after quenching, this alloy can be formed over appreciably smaller radii.

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RADIi REQUIRED FOR 90° BEND IN TERMS OF THICKNESS, †

Bend Classification	Approximate Thickness, Inch					
	0.016 1/64	0.032 1/32	0.064 1/16	0.128 1/8	0.182 3/16	0.258 1/4
A	0	0	0	0	0	0
B	0	0	0	0	0-1†	0-1†
C	0	0	0	0-1†	0-1†	1/2†-1 1/2†
D	0	0	0-1†	1/2†-1 1/2†	1†-2†	1 1/2†-3†
E	0-1†	0-1†	1/2†-1 1/2†	1†-2†	1 1/2†-3†	2†-4†
F	0-1†	1/2†-1 1/2†	1†-2†	1 1/2†-3†	2†-4†	2†-4†
G	1/2†-1 1/2†	1†-2†	1 1/2†-3†	2†-4†	3†-5†	4†-6†
H	1†-2†	1 1/2†-3†	2†-4†	3†-5†	4†-6†	4†-6†
J	1 1/2†-3†	2†-4†	3†-5†	4†-6†	4†-6†	5†-7†
K	2†-4†	3†-5†	3†-5†	4†-6†	5†-7†	6†-10†

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DATA

ALUMINUM AND ITS ALLOYS (Continued)

CHEMICAL COMPOSITION LIMITS FOR WROUGHT ALLOYS^①

Composition in per cent; maximum unless shown as a range

Alloy	Aluminum	Copper	Iron	Silicon	Manganese	Zinc	Chromium	Nickel	Titanium	Other Elements
	Each									Total
EC ^②	99.45% min.	0.05	.....	.....	.....	.....	.....	.....	.....	0.05
99.6% Al	99.6% min.	0.20	.....	.....	0.05	.....	.....	.....	.....	0.15
1100	99.0% min.	0.70	.....	.....	1.0-1.5	0.10	.....	.....	.....	0.15
3003	Remainder	0.20	0.60	.....	.....	0.10	.....	.....	.....	0.05

Alclad 3003

3003 sheet or tubing coated with 7072 alloy^⑤

Alclad 3004

3004 sheet coated with 7072 alloy^⑬

Alclad 2014

2014 sheet coated with 6053 alloy^⑦

2017	Remainder	35.4.5	1.0	0.80	0.4-1.0	0.2-0.8	0.10	.....	.....	0.05
2117	Remainder	22.3.0	1.0	0.80	0.20	0.2-0.5	0.10	0.10	.....	0.15
2118	Remainder	35.4.5	1.0	0.90	0.20	0.45-0.9	0.25	0.10	1.7-2.3	0.05
2218	Remainder	35.4.5	0.85	0.45-0.9	0.20	1.3-1.8	0.25	0.10	1.8-2.3	0.05
2224	Remainder	38.4.9	0.50	0.50	0.3-0.9	1.2-1.8	0.10	0.10	0.05

See footnotes next page

Continued on next page

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DATA

ALUMINUM AND ITS ALLOYS (Continued)

CHEMICAL COMPOSITION LIMITS FOR WROUGHT ALLOYS⁽¹⁾ (Continued)

Composition in per cent; maximum unless shown as a range

2024 sheet coated with 99.3% min. aluminum ⁽⁸⁾											Alloy	Aluminum	Copper	Iron	Silicon
Alclad 2024	Alloy	Aluminum	Copper	Iron	Silicon	Manganese	Magnesium	Zinc	Chromium	Nickel	Titanium	Other Elements	Each	Total	
2025	Remainder	3.9-5.0	1.0	0.5-1.2	0.4-1.2	0.05	0.25	0.10	0.10	0.15	0.05	0.05	0.05	0.15	
4032	Remainder	0.5-1.3	1.0	11.5-13.5	0.05	0.8-1.3	0.25	0.10	0.5-1.3	0.05	0.05	0.05	0.05	0.15	
4043	Remainder	0.30	0.80	4.5-6.0	0.05	0.10	0.10-1.6	0.10	0.10	0.20	0.05	0.05	0.05	0.15	
5005	Remainder	0.20	0.65	0.30	0.10	0.6-1.2	0.20	0.45-0.55	0.25	0.10	0.15	0.05	0.05	0.15	
6151	Remainder	0.35	1.0	0.6-1.2	0.05	0.10	0.2-2.8	0.10	0.15-0.35	0.10	0.15	0.05	0.05	0.15	
6052	Remainder	0.10	0.35	0.05	0.10	0.30	0.05-0.20	0.10	0.15-0.35	0.10	0.15	0.05	0.05	0.15	
6053	Remainder	0.10	0.40	0.30	0.10	0.4-0.8	0.15	0.49-0.56	0.10	0.10	0.15	0.05	0.05	0.15	
5056	Remainder	0.15-0.40	0.70	0.4-0.8	0.10	0.15	0.8-1.2	0.20	0.15-0.35	0.10	0.15	0.05	0.05	0.15	
6061	Remainder	0.15-0.40	0.70	0.4-0.8	0.10	0.15	0.8-1.2	0.20	0.15-0.35	0.10	0.15	0.05	0.05	0.15	
6062	Remainder	0.10	0.35	0.2-0.6	0.10	0.10	0.15-0.85	0.10	0.15	0.10	0.10	0.05	0.05	0.15	
6063	Remainder	0.10	0.35	0.2-0.6	0.10	0.10	0.15-0.85	0.10	0.15	0.10	0.10	0.05	0.05	0.15	
7072	Remainder	1.2-2.0	0.70	0.50	0.30	2.1-2.9	5.1-6.1	0.18-0.40	0.10	0.20	0.05	0.05	0.05	0.15	
7075	Remainder	1.2-2.0	0.70	0.50	0.30	2.1-2.9	5.1-6.1	0.18-0.40	0.10	0.20	0.05	0.05	0.05	0.15	

Alclad 7075 7075 sheet coated with 7072 alloy⁽¹²⁾

(1) Analysis is normally made only for those elements for which a specific range or limit is given in the table. If, however, the presence of other elements is indicated or suspected during the course of routine analysis, it should be determined that they are not present in amounts exceeding the limits prescribed in the last two columns. See pages 295 and 296 for nominal composition.

(2) Electrical conductor metal.

(3) Iron plus silicon — 0.4 per cent maximum.

(4) When sheet is coated on both sides, the coatings each are nominally 10 per cent of the total thickness; when coated on one side, the coating is nominally 15 per cent of the thickness when the thickness is less than 0.065 inch and $\frac{1}{2}$ per cent of the thickness when the thickness is 0.065 inch or more. Tubing is coated only on the inside and the coating is nominally 10 per cent of the wall thickness.

(5) Iron plus silicon — 0.45 per cent maximum.

(6) Silicon — 0.6 per cent maximum.

(7) The coating on each side is nominally 4 per cent of the total thickness.

(8) The coating on each side is nominally 5 per cent of the total thickness.

(9) Also contains 0.2-0.6 per cent each of lead and bismuth.

(10) The coating on each side is nominally 10 per cent of the total thickness for sheet less than 0.040 inch thick and 5 per cent for sheet or plate 0.040 inch or more in thickness.

(11) The coating is permitted to contain 0.7 per cent iron plus silicon, 0.1 per cent copper, 0.1 per cent zinc, 0.05 per cent manganese and traces of other elements. The coating on each side is nominally 5 per cent of the total thickness when the thickness is less than 0.064 inch and $\frac{1}{2}$ per cent when the thickness is 0.06 inch or more.

(12) Silicon — 0.45 per cent maximum.

(13) Iron plus silicon — 0.6 per cent maximum.

(14) The coating on each side is nominally 4 per cent of the total thickness.

(15) The coating on each side is nominally 5 per cent of the total thickness.

DATA

ALUMINUM AND ITS ALLOYS (Continued)

WORKING CHARACTERISTICS OF ALCOA WROUGHT ALLOYS

Alcoa Alloy No.	Condition	Approx. Weight lb./cm. ² , in.	Relative Resistance to Corrosion ⁽¹⁾	Relative Suitability for being Cold-Worked ⁽²⁾	Relative Machinability ⁽²⁾	Relative Suitability for being Brazed ⁽³⁾	Relative Suitability for being Welded ⁽³⁾		Resistance Spot and Seam
							Gas	Arc	
1100-O	Annealed	.098	A	A+	B	A	A	A	B
1100-H18	Hard	.098	A	B-	B	A	A	A	A
3003-O	Annealed	.099	A	A+	B	A	A	A	B
3003-H18	Hard	.099	A	C+	B	A	A	A	A
Alclad 3003-O	Annealed	.099	A	A+	B	A	B	B	B
Alclad 3003-H18	Hard	.099	A	C+	B	B	A	A	A
3004-O	Annealed	.098	A	A+	B	B	B	D	D
3004-H38	Hard	.098	A	C+	B	D	D	D	D
2011-T3	Heat-treated	.102	D	C-	A	D	D	D	D
2011-T8	H. T. & Cold-wkd.								
& Aged									
2014-T4	C*	.102	D	A	D	D	D	D	D
2014-T6	Heat-treated	.101	C*	C	A	D	B	B	B
H. T. & Aged									
Alclad 2014-T3 ⁽³⁾	C*	.101	A	C-	A	D	D	D	B
Alclad 2014-T6 ⁽³⁾	H. T. & Aged	.101	A	C-	A	D	D	D	B
2017-T4	Heat-treated	.101	C*	C	A	D	D	D	A
2117-T4	Heat-treated	.099	C	B-	A	D	D	C	D
2018-T61	H. T. & Aged	.102	C*	C-	A	D	D	B	B
2024-T3	Heat-treated	.100	C*	D+	A	D	D	B	B
2024-T36	H. T. & Cold-wkd.	.100	C*	C	A	D	D	B	B
Alclad 2024-T3 ⁽³⁾	H. T. & Cold-wkd.	.099	A	C-	A	D	D	B	B
Alclad 2024-T36 ⁽³⁾	H. T. & Aged	.097	C	C	D	D	D	C	C
4032-T6	Annealed	.097	A	A+	B	B	A	A	B
5050-O	Hard	.097	A	C+	B	B	A	A	A
5050-H38									

See footnotes next page.

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ALUMINUM AND
ITS ALLOYS (Continued)

WORKING CHARACTERISTICS OF ALCOA WROUGHT ALLOYS (Continued)

Alcoa Alloy No.	Condition	Approx. Weight, lb./cu. in.	Relative Resistance to Corrosion ⁽¹⁾	Relative Suitability for being Cold-Worked ⁽²⁾	Relative Machinability ⁽²⁾	Relative Suitability for being Brazed ⁽²⁾	Relative Suitability for Being Welded ⁽³⁾		
							Gas	Arc	Resistance Spot and Seam
6151-T6	H. T. & Aged	.098	B	...	B	B	A	A	A
5052-O	Annealed	.097	A	A+	B	C	A	A	B
5052-H38	Hard	.097	A	C+	B	C	A	A	A
6053-T4	Heat-treated	.097	A	B-	B	A	A	A	A
6053-T6	H. T. & Aged	.097	A	C+	B	A	A	A	A
5154-O	Annealed	.100	A	B+	C	D	C	A	B
5154-H34	Hard	.100	A	B+	C	D	C	A	B
5154-H38	Hard	.100	A	B+	C	D	C	A	A
5056-O	Annealed	.095	A	A	B	D	C	A	B
5056-H38	Hard	.095	B	B-	B	D	C	A	A
6061-T4	Heat-treated	.098	A	B	B	A	A	A	A
6061-T6	H. T. & Aged	.098	A	B-	B	A	A	A	A
6063-T5	Extruded & Aged	.098	A	B	A	A	A	A	A
7075-T6 ⁽⁴⁾	H. T. & Aged	.101	C	D	A	D	D	D	B
Alclad 7075-T6	H. T. & Aged	.101	A	D+	A	D	D	D	B

- ⁽¹⁾ An "A" rating is highest. However, under many conditions, alloys rated "D" are used with entirely satisfactory results; on the other hand, alloys rated "A" require protection in some exposures.
⁽²⁾ Relative hot and cold workability and machinability are indicated as follows: A = Excellent, B = Good, C = Fair, D = Poor. Ratings are based on aluminum-base alloys as a group and are not to be used in comparison with other metals.
⁽³⁾ Sheet over .064 in. thick will have slightly higher tensile and yield strengths.
⁽⁴⁾ For extrusions the strengths will be higher.

- ⁽⁵⁾ Weldability ratings A, B, C and D are relative ratings defined as follows:
 A. Generally weldable by all commercial procedures and methods.
 B. Weldable with special technique or on specific applications which justify preliminary trials or testing to develop welding procedure and weld performance.
 C. Limited weldability because of crack sensitivity or loss in resistance to corrosion and mechanical properties.
 D. No commonly used welding methods have so far been developed.

DATA

COPPER AND ITS ALLOYS

Copper is relatively soft and ductile, and has a high electrical and thermal conductivity. It is available in all commercial forms, and is readily worked either hot or cold. Copper is highly corrosion resistant and is the base metal for many commercial alloys, of which brass is the best known.

Spring Brass is a special yellow brass, produced mainly for high-quality brass springs. It has high physical properties, and good corrosion resistance.

Yellow Brass and Muntz Metal are copper alloys with high zinc contents. All have good physical properties, and are economical alloys to use for many applications. However, under certain corrosive conditions they are subject to dezincification. They are also susceptible to corrosion cracking when subjected to high stresses under corrosive conditions. Free-cutting yellow brass is an alloy with a substantial percentage of lead added to improve its machining properties. This alloy is produced in rod form for screw machine work.

Tobin Bronze* is a high zinc alloy, containing a small percentage of tin. It has high strength, fair corrosion resistance, good bearing qualities, and good resistance to erosion, and fair fatigue resistance. It is widely used for shafts, studs, and stay bolts.

Extruded Architectural Bronze and Engravers Brass are other high-zinc alloys. Engravers Brass is a leaded brass, produced in sheet form for operations that require special machining or cutting. Extruded Architectural Bronze is produced in many intricate extruded shapes for molding, frames, and decorative trim.

Phosphor Bronze alloys all have similar properties. They have high strength, good corrosion resistance, excellent bearing and spring properties, and good fatigue resistance. Among the Phosphor Bronze alloys, those with higher tin contents have higher physical properties. Phosphor Bronze is regularly used in the form of wire, sheet and strip (for making springs), and rod (for machining bushings and bearings). A free-cutting Phosphor Bronze is available for high-speed machining and screw machine work.

18% Nickel Silver is a silvery white alloy of copper, nickel, and zinc. It has good corrosion resistance and high physical properties. Yet, it is highly malleable and ductile, making it suitable for many types of forming operations.

Additional Information. All of the factors to be considered, and the problems likely to be encountered in selecting the proper alloy for specific applications, cannot be discussed here. However, the technical literature developed by the Technical Staff of the American Brass Company is available to you free of cost. Just call our nearest warehouse or sales office. We will be happy to furnish you with the information and literature you need.

NOTE: The tabulated values in the following tables are average and, because of manufacturing limitations, *should not be used for specification purposes*. Within manufacturing limitations and when so specified Anaconda products will be manufactured to applicable current ASTM specifications.

*Trademark Reg. U. S. Pat. Off.

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COPPER AND ITS ALLOYS (Continued)

PHYSICAL PROPERTIES OF COPPER ALLOYS

Alloy	Form	Alloy No.	Tensile Strength lb per sq. inch			Elongation % in 2 inch (unless otherwise noted)			Yield Strength @ 0.5% Elongation under Load lb. per sq. inch			Rockwell Hardness No.		
			Old	New	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft
Coppers														
Electrolytic	Sheet		100	110	46,000	33,000	5	35	40,000	10,000	B51	F35		
Tough Pitch	Rod				45,000	32,000	15	45	40,000	10,000	B50	F35		
Phosphorized	Wire				66,000	35,000	1(e)	35(e)						
Phosphorized	Tube	103	122	45,000	35,000	10	45	40,000	10,000	B50	F40			
Boron Dioxide	Rod	117	171	45,000	32,000	15	45	40,000	10,000	B50	F35			
Silver Bearing	Sheet	112	114	46,000	33,000	5	35	40,000	10,000	B51	F35			
Silver Bearing	Sheet	113	116	46,000	33,000	5	35	40,000	10,000	B51	F35			
Phosphorized	Tube	108	142	45,000	35,000	10	45	40,000	10,000	B50	F40			
Arsenical	Rod	127	145	45,000	32,000	12	45	40,000	10,000	B50	F35			
Tellurium	Rod	126	187	45,000	32,000	12	45	40,000	10,000	B50	F35			
Leaded														
Brasses														
Gilding	Sheet	4	210	55,000	35,000	5	38	44,000	11,000	B61	F45			
Commercial Bronze	Sheet	14	220	62,000	37,000	6	40	47,000	12,000	B70	B1			
Commercial Bronze	Wire	21	226	80,000	38,000	1(e)	40(e)							
Red Brass	Sheet				65,000	38,000	6	42	50,000	13,000	B73	B3		
Red Brass	Wire	24	230		69,000	40,000	7	45	55,000	15,000	B76	B5		
Low Brass	Tube				88,000	42,000	1(e)	42(e)						
Low Brass	Sheet	32	240		69,000	40,000	10	50	55,000	15,000	B76	B5		
Cartridge Brass	Wire	42	260		73,000	43,000	8	50	60,000	16,000	B81	B10		
Yellow Brass	Sheet	59	268		100,000	47,000	1(e)	45(e)						

Continued on next page

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DATA

COPPER AND ITS ALLOYS (Continued)

PHYSICAL PROPERTIES OF COPPER ALLOYS (Continued)

Alloy	Form	Alloy No.	Tensile Strength lb. per sq. inch		Elongation % in 2 inch (unless otherwise noted)		Yield Strength @ 0.5% Elongation under Load lb. per sq. inch		Rockwell Hardness No.	
			Old	New	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft
Brasses (Continued)										
Yellow Brass	Rod	61	274	65,000	46,000	20	60	50,000	17,000	B75
Muntz Metal	Wire	66	280	105,000	50,000	1(e)	50(e)	.....	20,000	.....
Lead-Leaded Commercial	Sheet	201	310	62,000	37,000	6	40	47,000	12,000	B70
Bronze	Rod	202	314	54,000	37,000	15	40	45,000	12,000	B70
Bronze	Rod	267	320	52,000	40,000	20	55	43,000	15,000	B58
Hardware Bronze	Tube	220	330	73,000	45,000	10	55	60,000	17,000	B80
Leaded Tube Brass	Tube	218	330	73,000	45,000	10	55	60,000	17,000	B80
Free Cutting Tube Brass	Tube	282	332	73,000	45,000	9	55	60,000	17,000	B80
Leaded Tube Brass	Tube	223	330	73,000	45,000	10	55	60,000	17,000	B80
Threading Brass	Sheet	226	335	73,000	45,000	9	55	60,000	17,000	B80
Low-Leaded Brass	Sheet	229	340	73,000	45,000	8	55	60,000	17,000	B80
Medium-Leaded Brass	Sheet	235	342	73,000	45,000	8	52	60,000	17,000	B80
High-Leaded Brass	Sheet	238	356	73,000	45,000	7	50	60,000	17,000	B80
Extra-High-Leaded Brass	Sheet	271	360	58,000	47,000	18	60	42,000	18,000	B70
Free Cutting Brass	Rod	262	371	58,000	47,000	18	60	42,000	18,000	B70
Free Cutting Brass	Bar	243	355	73,000	45,000	7	50	60,000	17,000	B80
High-Leaded Brass	Sheet	274	365	.....	54,000	.....	45	.....	20,000	.....
Leaded Muntz Metal	Tube	393	371	80,000	54,000	6	40	60,000	20,000	B85
Muntz Metal Forging Brass	Rod	250	377	.....	54,000	45	.....	20,000	.....	B45

Continued on next page

See Code page 275.

STAINLESS STEEL

MONEL-NICKEL

GENERAL

AHOMA

DATA

COPPER AND ITS ALLOYS
(Continued)

PHYSICAL PROPERTIES OF COPPER ALLOYS (Continued)

Alloy	Form	Alloy No.	Tensile Strength (lb. per sq. inch)			Elongation in 2 inch (unless otherwise noted)		Yield Strength @ 0.5% Elongation under Load lb. per sq. inch		Rockwell Hardness No.	
			Old	New	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft	Hard (c)
Brasses (Continued)	Rod	280	385	.....	.....	60,000	.....	25	.....	.....	B65
Architectural Bronze	Rod	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Special Brasses	Sheet	474	—	60,000	40,000	6	40	50,000	15,000	B70	B5
Ambroze	Sheet	286	316	70,000	46,000	12	56	60,000	20,000	B80	B15
High Strength	Rod	421	—	.....	.....	.....	.....	.....	.....	.....	.....
Comm. Bronze	Tube	1027	—	69,000	40,000	7	45	55,000	15,000	B76	B5
Ambroze	Sheet	435	—	90,000	55,000	8	60	50,000	20,000	B90	B25
Manganese	Sheet	1027	—	80,000	48,000	10	60	.....	.....	.....	.....
Red Brass	Tube	—	—	—	—	—	—	—	—	—	—
Silicon Red Brass	Sheet	—	—	—	—	—	—	—	—	—	—
Trumpet Brass	Tube	—	—	—	—	—	—	—	—	—	—
Ambraloy	—	—	—	—	—	—	—	—	—	—	—
(Aluminum Brass)	Tube	927	—	85,000	52,000	10	65	60,000	20,000	B85	B30
Arsenical Admiralty	Sheet	439	—	85,000	52,000	10	65	.....	18,000	.....	.....
Manganese Brass	Tube	510	667	76,000	47,000	10	65	62,000	20,000	B83	B30
Naval Brass	Sheet	450	—	56,000	56,000	—	—	—	17,000	—	—
Tobin Bronze*	Rod	452	—	63,000	56,000	30	40	—	22,000	—	—
Leaded Naval Brass	Rod	605	—	63,000	56,000	35	45	—	22,000	B65	B50
Leaded Naval Brass	Rod	612	—	63,000	56,000	28	38	—	22,000	B65	B50
Manganese Bronze	Rod	937	—	75,000	60,000	25	35	35,000	22,000	B85	—
						20	30	45,000	30,000	—	—

*Trade Mark, Reg. U. S. Pat. Off.

See Code page 275.

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DATA

COPPER AND ITS ALLOYS (Continued)

PHYSICAL PROPERTIES OF COPPER ALLOYS (Continued)

Alloy	Form	Alloy No.	Tensile Strength lb. per sq. inch		Elongation % in 2 inch (unless other- wise noted)		Yield Strength @ 0.5% Elongation under Load lb. per sq. inch		Rockwell Hardness No.	
			Old	New	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft
Aluminum Bronzes										
Ambraloy	Sheet	901	92,000	55,000	7	65	65,000	22,000	B92	B35
	Rod		.....	55,000	.....	60	.....	22,000	.....	B35
Ambraloy	Sheet	928	105,000	60,000	7	60	65,000	25,000	B96	B50
	Rod		80,000	65,000	30	65	50,000	25,000	.....	B50
Availite*	Rod	915	95,000	80,000	16	22	55,000	40,000	.....	.....
Ambraloy	Plate	917	—	105,000	12	.....	60,000	.....	B105	.....
Cadmium Bronzes										
Hitenso*	Sheet	961	1622	55,000	37,000	6	50	48,000	12,000	B65
Hitenso*	Wire	965	165	90,000	40,000	1(e)	40(e)	.....	.....	F47
	Wire			95,000	42,000	1(e)	40(e)	.....	.....	.....
Copper Silicon Alloys										
Everdur*	Sheet	1010	—	95,000	58,000	7	60	60,000	22,000	B92
	Rod		—	90,000	58,000	1(e)	70	60,000	22,000	B90
Everdur*	Wire	1012	—	145,000	60,000	1(e)	50(e)	.....	.....	B35
Everdur*	Rod	1012	—	90,000	65,000	18	46	60,000	15,000	B77
Everdur*	Sheet	1015	—	120,000	40,000	15	50	55,000	15,000	B80
Everdur*	Rod	1015	—	122,000	42,000	1(e)	40(e)	50,000	15,000	B75
Everdur*	Wire	1014	—	65,000	40,000	8	50	50,000	15,000	.....
Everdur*	Tube				95,000	.....	25	53,000	.....	.....
Everdur*	Rod	1014	—	—	—	—	—	—	—	—

*Trade Mark, Reg. U. S. Pat. Off.

Continued on next page

See Code page 275.

STAINLESS STEEL

MOLY-NICKEL

GENERAL

LAHOMA

COPPER AND ITS ALLOYS (Continued)

PHYSICAL PROPERTIES OF COPPER ALLOYS (Continued)

Alloy	Form	Alloy No.	Tensile Strength lb per sq. inch		Elongation % in 2 inch (unless other- wise noted)		Yield Strength @ 0.5% Elongation under Load lb per sq. inch		Rockwell Hardness No.	
			Old	New	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft
Cupro Nickels										
Cupro Nickel, 10%	Tube	755	706	60,000	44,000	15	46	57,000	22,000	B68
	Sheet			55,000	55,000	5	40	70,000	22,000	B84
Cupro Nickel, 30%	Rod	702	715	70,000	55,000	25	40	60,000	22,000	B80
	Wire			95,000	58,000	1(e)	45	60,000	22,000	B80
	Tube			70,000	55,000	10	45			B35
Nickel Silvers										
Nickel Silver, 10%	Sheet	751	745	88,000	55,000	7	42	70,000	20,000	B87
	Sheet			85,000	58,000	4	40	70,000	20,000	B85
Nickel Silver, 18%	Rod	719	752	70,000	58,000	20	45	.....	.....	B40
	Wire			110,000	60,000	1(e)	40(e)	.....	.....	B40
Nickel Silver, 18%	Sheet			99,000	60,000	4	45	75,000	22,000	B93
	Rod	724	770	80,000	60,000	20	45	60,000	22,000	B85
	Wire			130,000	65,000	1(e)	40(e)	.....	.....	B45
Leaded Nickel Silver, 10%	Rod	825	796	70,000	.....	15	.....	40,000	.....	.....
										B70
Special Alloys										
Calsun Bronze*	Wire	951	—	135,000	52,000	1(e)	40(e)	57,000	15,000	B70
	Rod	999	182	62,000	35,000	20	40	61,000	45,000	B77
Chromium Copper	Rod (f)			72,000	63,000	25	45			F50
										B65

*Trade Mark, Reg. U. S. Pat. Off.

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See Code page 275.

DATA

COPPER AND ITS ALLOYS (Continued)

PHYSICAL PROPERTIES OF COPPER ALLOYS (Continued)

Alloy	Form	Alloy No.	Tensile Strength lb. per sq. inch		Elongation in 2 inch (unless otherwise noted)		Yield Strength @ 0.5% Elongation under Load lb. per sq. inch		Rockwell Hardness No.	
			Old	New	Hard (c)	Soft	Hard (c)	Soft	Hard (c)	Soft
Phosphor Bronzes										
Phosphor Bronze	Sheet	356	505	65,000	40,000	6	48	50,000	14,000	B75
Phosphor Bronze	Wire	361	507	105,000	45,000	1(e)	40(e)	.....	.....	F60
Phosphor Bronze	Sheet	(A)-302	5690	80,000	48,000	8	50	65,000	20,000	B86
Phosphor Bronze	Rod	(A)-303	5091	65,000	48,000	30	50	55,000	20,000	B75
Phosphor Bronze	Wire	.....	.....	110,000	52,000	1(e)	40(e)	.....	.....	B28
Phosphor Bronze	Rod	314	5092	65,000	48,000	30	50	55,000	20,000	B75
Phosphor Bronze	Sheet	(A)-351	510	80,000	48,000	8	50	65,000	20,000	B86
L. Phosphor Bronze	Rod	(B)-379	534	65,000	48,000	25	40	55,000	20,000	B75
Phosphor Bronze	Wire	320	5181	120,000	57,000	1(e)	40(e)	.....	.....	B28
Phosphor Bronze	Sheet	.....	.....	93,000	60,000	10	65	68,000	24,000	B94
Phosphor Bronze	Rod	(C)-353	521	80,000	50,000	30	65	24,000	.....	B50
Phosphor Bronze	Wire	.....	.....	130,000	62,000	1(e)	40(e)	.....	.....	B50
Phosphor Bronze	Sheet	.....	.....	102,000	66,000	12	65	70,000	28,000	B98
Phosphor Bronze	Rod	(D)-354	524	85,000	65,000	25	65	.....	.....	B55
Free Cutting Phosphor Bronze	Rod	610	544	145,000	68,000	1(e)	40(e)	.....	.....	.....
Phosphor Bronze	Rod	.....	.....	60,000	.....	20	.....	45,000	.....	B75

CODE

c—Hard Temper: values are for soft sheet that has been reduced about 37% in thickness by cold rolling and for Rod, Wire, and Tube of commercial hard drawn temper.

e—Elongation of wire, per cent in 10 inches.

f—Properties after heat treatment (alloy No. 999).

STAINLESS STEEL
MONEL-NICKEL
GENERAL

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DATA

COPPER AND ITS ALLOYS (Continued)

CHEMICAL COMPOSITION OF ALLOYS

Name	Alloy No.	Nominal Composition, per cent								
		Old	New	Copper	Zinc	Tin	Lead	Aluminum	Phosphorus	Manganese	Others
Coppers										
Electrolytic Tough Pitch	100	110	99.9+	.....	.....	.....	.....	.....	0.02	.....
Deoxidized	103	122	99.9+	.....	.....	.....	.....	.....	.....	.....
Tellurium	127	145	99.50	.....	.....	.....	.....	.....	.....	Tellurium, 0.50
Leaded	126	187	99.00	.....	.....	.....	1.00	.....	.....	.....
Brasses										
Commercial Bronze	14	220	90.00	10.00	.....	.....	.....	.....	.....	.....
Red Brass	24	230	85.00	15.00	.....	.....	.....	.....	.....	.....
Low Brass	32	240	80.00	20.00	.....	.....	.....	.....	.....	.....
Cartridge Brass	42	260	70.00	30.00	.....	.....	.....	.....	.....	.....
Yellow Brass	59	268	66.00	34.00	.....	.....	.....	.....	.....	.....
Yellow Brass	61	274	63.00	37.00	.....	.....	.....	.....	.....	.....
Muntz Metal	66	280	60.00	40.00	.....	.....	.....	.....	.....	.....
Leaded Brasses										
Leaded Commercial Bronze	201	310	90.00	9.50	.....	.....	0.50	.....	.....	.....
Leaded Commercial Bronze	202	314	88.50	9.25	.....	.....	2.25	.....	.....	.....
Leaded Tube Brass	218	330	66.50	33.00	.....	.....	0.50	.....	.....	.....
Free Cutting Brass	271	360	61.50	35.25	.....	.....	3.25	.....	.....	.....
Clock Brass	243	353	61.50	37.00	.....	.....	1.50	.....	.....	.....
Extruded Architectural Bronze	280	385	56.00	41.50	.....	.....	2.50	.....	.....	.....

Continued on next page

DATA

COPPER AND ITS ALLOYS (Continued)

CHEMICAL COMPOSITION OF ALLOYS (Continued)

Name	Alloy No.		Nominal Composition, per cent							
	Old	New	Copper	Zinc	Tin	Lead	Aluminum	Phosphorus	Manganese	Others
Special Brasses										
Ambraley (Aluminum Brass)	927	—	77.00	20.96	1.00	.....	2.00	.....	.....	Arsenic, 0.04
Arsenic Admiralty	439	—	71.00	27.96	0.75	.....	.....	.....	.....	Arsenic, 0.04
Naval Brass	450	—	60.00	39.25	0.75	.....	.....	.....	.....	.....
Tobin Bronze*	452	—	60.00	39.25	0.75	.....	.....	.....	.....	.....
Leaded Naval Brass	605	—	60.00	38.55	0.75	0.70	.....	.....	.....	.....
Leaded Naval Brass	612	—	60.00	37.50	0.75	1.75	.....	.....	.....	.....
Manganese Bronze	937	—	58.50	39.25	1.00	.....	.....	.....	.....	Iron, 1.00
Phosphor Bronzes										.....
Phosphor Bronze, 5% (Grade A)	351	510	94.75	5.00	.....	.....	.....	0.25	.....	.....
Phosphor Bronze, 10% (Grade D)	354	524	89.75	10.00	.....	.....	.....	0.25	.....	.....
Free Cutting Phosphor Bronze	610	544	87.90	4.00	4.00	4.00	.....	0.10	.....	.....
Aluminum Bronzes										.....
Ambraley	901	—	95.00	.....	.....	.....	5.00	.....	.....	.....
Ambraley	928	—	92.00	.....	.....	.....	8.00	.....	.....	Nickel, 0.50
Avalloy*	915	—	89.25	0.40	9.25	Iron, 0.60
Ambraley	917	—	82.00	9.50	Nickel, 5.00
										Iron, 2.50

*Trade Mark Reg. U. S. Pat. Off.

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MONEL-NICKEL
GENERAL

GENERAL

STAINLESS STEEL

AHOMA

COPPER AND ITS ALLOYS (Continued)

CHEMICAL COMPOSITION OF ALLOYS (Continued)

Name	Alloy No.		Copper	Zinc	Tin	Lead	Nominal Composition, per cent	Phosphorus	Manganese	Others
	Old	New								
Copper-Silicon Alloys										
Everdur*	1010	—	95.80	.....	.....	.....	.....	.....	1.10	Silicon, 3.10
Everdur*	1012	—	95.60	.....	.....	0.40	.....	.....	1.00	Silicon, 3.00
Everdur*	1014	—	90.75	.....	.....	.....	7.25	.....	.....	Silicon, 2.00
Everdur*	1015	—	98.25	.....	.....	.....	.....	.....	0.25	Silicon, 1.50
Cupro Nickels										
Cupro Nickel, 10%	755	706	88.35	.....	.....	.....	.....	.....	0.40	Nickel, 10.00
Cupro Nickel, 30%	702	715	68.90	.....	.....	.....	.....	.....	0.60	Nickel, 30.00
Nickel Silvers										
Nickel Silver, 10%	751	745	66.00	24.00	.....	.....	.....	.....	.....	Nickel, 10.00
Nickel Silver, 18%	719	752	64.50	17.50	.....	.....	.....	.....	.....	Nickel, 18.00
Nickel Silver, 18%	724	770	55.00	27.00	.....	.....	.....	.....	.....	Nickel, 18.00
Ambrac*	850	7321	75.00	5.00	.....	.....	.....	.....	.....	Nickel, 20.00

*Trade Mark Reg. U. S. Pat. Off.

DATA

COPPER-BASE TUBE ALLOY FOR STATIONARY POWER AND MARINE APPLICATIONS

Where Used	Tube Alloys
Air Cooled Heat Exchangers	Copper, Finned Admiralty or Copper
Auxiliary Steam Evaporators	Admiralty, etc.
Boiler Blowdown Heat Exchangers	Admiralty, Cupro Nickel
Boiler Feed Make-up Water Evaporators	Admiralty, Cupro Nickel
Compressed Air Coolers	Admiralty, Copper, Red Brass, etc.
Compressed Air Lines	Copper
Condensate Coolers	Admiralty, Copper, etc.
Diesel Lubricating Oil Coolers	Admiralty, Copper, Red Brass, etc.
Diesel Jacket Water Coolers	Admiralty, Copper, etc.
Economizers	Admiralty
Evaporators	Admiralty, Copper, Red Brass, etc.
Evaporator Condenser	Admiralty, Aluminum Brass, Duronze IV, 70-30 Cupro Nickel, etc.
Exhaust Gas Water Heaters	Admiralty, Aluminum Brass, Duplex
Feed Water Heaters	Admiralty, Copper, Cupro Nickel, etc.
Fuel Oil Heaters	Copper, Admiralty, etc.
Fuel Oil Lines	Copper, Admiralty, Red Brass, etc.
Generator Air Coolers	Admiralty, 70-30 Cupro Nickel, etc.
Gland Steam Condensers	Admiralty, Copper, etc.
Hydraulic Pressure Lines	Copper, 2% Silicon Bronze, etc.
Hydrogen Coolers	Admiralty, 70-30 Cupro Nickel, Aluminum Brass, etc.
Instrument Tubing	Copper, 2% Silicon Bronze
Intercoolers and Aftercoolers	Admiralty, etc.
Lubricating Oil Coolers	Admiralty, Red Brass, Copper, etc.
Refrigeration or Cooling Equipment	Admiralty, Copper, Duplex Tubes, etc.
Steam Condensers-Main or Auxiliary	Admiralty, Aluminum Brass, Muntz Metal, Duronze IV, Copper, 70-30 Cupro Nickel, etc.
Tank Suction Oil Heaters	Copper, Admiralty, Muntz Metal, etc.
Turbine Oil Coolers	Admiralty, Aluminum Brass, Duronze IV, 70-30 Cupro Nickel
Unit Heaters and Coolers	Copper, Admiralty
Vent Condensers	Admiralty, Red Brass, etc.
Water Heaters	Copper, Admiralty, Red Brass, etc.
Waste Water Heat Exchangers	Copper, Admiralty, Red Brass, Duplex
Water Lines	Copper, Red Brass.

STAINLESS STEEL
AND STEEL

MONEL-NICKEL

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DATA

STAINLESS ANALYSES

Groups	AISI Type	Chromium
Chromium-Nickel, Non-Hardenable Grades (Austenitic)		
	301	16.0-18.0
	302	17.0-19.0
	303	17.0-19.0
	304	18.0-20.0
	308	19.0-21.0
	309	22.0-24.0
	310	24.0-26.0
	316	16.0-18.0
	321	17.0-19.0
	347	17.0-19.0
New Stainless Steel Type (Austenitic Group)		
AISI assigned symbol D319 to a new stainless steel type which is sponsored by the Chemical Industry Advisory Board. It is expected that the new type will eventually replace both Types 316 and 317 among chemical processing equipment manufacturers.		
Analysis shows that it has a very close relationship to Type 317 in chromium and nickel content, and is comparable to Type 317 in molybdenum content. (D signifies development)		
D319 17.5-19.5		
Straight Chromium, Hardenable Grades (Martensitic)		
This group includes those grades which have chromium as their chief alloying ingredient (from 11.5 to 18.0%) and with varying amounts of carbon, from approximately .08 to 1.10%. Nickel is present in Type 414 and Type 431, up to 2.50% but is not included in other alloys of this group as a principal alloying element. Each of these grades can be hardened to a high degree by quenching from high temperatures. They respond to heat treatment much the same as plain carbon and low alloy steels. They are magnetic. Because, when hardened, their crystalline structure is composed primarily of the micro-constituent martensite, they are commonly referred to as the "martensitic" stainless steels.		
NOTE: Types 420F and 440F have same compositions as 420 and 440C with addition of "free machining" element.		
403	11.5-13.5	
410	11.5-13.5	
414	- 11.5-13.5	
416	12.0-14.0	
420	12.0-14.0	
431	15.0-17.0	
440A	16.0-18.0	
440B	16.0-18.0	
440C	16.0-18.0	

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Nickel	Carbon	Manganese Max.	Silicon Max.	Phosphorus Max.	Sulphur Max.	Other Elements
6.0- 8.0	OVER .08-20	2.00	1.00	.04	.04	.....
8.0-10.0	OVER .08-20	2.00	1.00	.04	.04	.....
8.0-10.0	.20 MAX.	2.00	1.00	*	*	.....
8.0-10.0	.08 MAX.	2.00	1.00	.04	.04	.....
10.0-12.0	.08 MAX.	2.00	1.00	.04	.04	.....
12.0-15.0	.20 MAX.	2.00	1.00	.04	.04	.....
19.0-22.0	.25 MAX.	2.00	1.50	.04	.04	.....
10.0-14.0	.10 MAX.	2.00	1.00	.04	.04	MO 1.75-2.50
8.0-11.0	.10 MAX.	2.00	1.00	.04	.04	TI 4XC MIN.
9.0-12.0	.10 MAX.	2.00	1.00	.04	.04	CB 8XC MIN.
11.0-15.0	.07 MAX.	2.00	1.00	.045	.030	MO 2.25-3.00

.....	.15 MAX.	1.00	1.00	.04	.04	.....
.....	.15 MAX.	1.00	1.00	.04	.04	.....
1.25-2.50	.15 MAX.	1.00	1.00	.04	.04	.....
.....	.15 MAX.	1.00	1.00	.04	†	.....
.....	.15 MIN.‡	1.00	1.00	.04	.04	.....
1.25-2.50	.20 MAX.	1.00	1.00	.04	.04	.....
.....	.60-.75	1.00	1.00	.04	.04	MO .75 MAX.
.....	.75-.95	1.00	1.00	.04	.04	MO .75 MAX.
.....	.95-1.10	1.00	1.00	.04	.04	MO .75 MAX.

*P, S or SE — Usual Range Either .18/.35 S and .04 P or .18/35 SE and .12/.17 P. †Usual Range .18/.35. ‡Usual Range .35/.45.

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STAINLESS STEEL

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DATA

STAINLESS ANALYSES (Continued)

Groups	AISI Type	Chromium
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Straight Chromium, Non-Hardenable Grades (Ferritic)

This group is made up of alloys also containing chromium as the chief alloying element (from 14.0 to 27.0%) and with generally low carbon contents (from about .08 to .20%). Nickel is present in these alloys only as traces. Principally because of their higher chromium contents, as well as lower carbon contents, these alloys do not harden to any appreciable extent when quenched from high temperatures. They are also magnetic. When annealed, their crystalline structure is composed primarily of the micro-constituent alpha ferrite. Accordingly, they are referred to as "ferritic" stainless steels.

Precipitation-Hardening

This group has low hardening temperatures that avert problems of scaling, distortion, and cracking. Armco 17-7 PH is hardened by heat-treatment in the range of 900° F. to 1050° F. after suitable austenite conditioning and transformation to martensite. Armco 17-4 PH is hardened at 900° F. to 1150° F. by a single heat treatment. No stress-relief treatment is required. Armco PH 15-7 Mo is a new higher strength grade similar in composition and structure to 17-7 PH. Molybdenum is added to increase its mechanical properties at temperatures up to 1000° F. These precipitation-hardening grades are commercially available in all forms, can be hardened by simple heat treatments, are readily fabricated by standard methods, resist corrosion without plating or painting and possess high strength-weight ratios up to 900°-1000° F.

430 14.0-18.0
430F 14.0-18.0

442 18.0-23.0
446 23.0-27.0

17-7PH 17.00

17-4PH 16.50

PH 15-7 MO 14.0-16.0

ELC Grades

The extra low carbon grades contain a maximum of only 0.03 per cent carbon. This amount of carbon is low enough to eliminate carbide precipitation adjacent to welds during the welding operation. The ELC grades are not recommended for use at high temperature.

304L 18.0-20.0

316L 16.0-18.0

DATA

Nickel	Carbon	Manganese Max.	Silicon Max.	Phosphorus Max.	Sulfur Max.	Other Elements
--------	--------	----------------	--------------	-----------------	-------------	----------------

.....	.12 MAX.	1.00	1.00	.04	.04
.....	.12 MAX.	1.00	1.00	.04	§
.....	.35 MAX.	1.00	1.00	.04	.04
.....	.35 MAX.	1.00	1.00	.04	.04

NA

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7.00	.07	AL 1.10	
3.50	.04	CU 3.50	
6.50-7.75	.09	1.00	1.00	.04	.04	{ MO 2.00-3.00 AL 0.75-1.50

8.0-12.0	.03 MAX.	
10.0-14.0	.03 MAX.	MO 2.0-3.0	

§.07 Min. Usual Range .18/.35

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STAINLESS ANALYSES (Continued)

Type 301

This typical austenitic alloy can be used in place of 18-8 alloys in some cases when the application does not require as high corrosion resistance and drawing and forming properties as the 18-8 alloys possess. Its chief advantages over 18-8 grades are its greater stiffness and tensile strength, and its lower cost in sheet and strip form.

Type 301 is especially satisfactory for such products as cream separator discs, flatware, trays, novelties, bar equipment, and decorative applications.

Type 302 18-8

Essentially this is the basic grade and the most commonly used of all the chromium-nickel stainless steels. It retains an untarnished silvery surface under atmospheric conditions and has excellent heat oxidation resistance up to approximately 1600° F. In the annealed condition it is non-magnetic. Although it cannot be hardened by heat treatment its hardness and tensile strength may be considerably increased by cold working.

Because of its great ductility and exceptional toughness, it can be severely drawn, spun, rolled, machined or otherwise worked in the cold state. Its welding properties are outstanding.

Type 302 is widely used for hotel, restaurant and dairy equipment. It will withstand most of the corrosive solutions encountered in the textile, paper, chemical, processing and food handling industries.

Type 303 18-8 Free Machining

Type 303 is similar in mechanical, physical, and corrosion-resisting properties to Type 302. It contains an addition of sulphur or selenium and phosphorus to improve machinability.

While Type 302 may be machined at speeds up to about 45%, Type 303 can be used at speeds over 75% of those employed for Bessemer screw stock. Like Type 302 it is non-magnetic unless work hardened.

Type 304 18-8 Low Carbon

This grade is similar to Type 302 except that a maximum carbon content of .08% is guaranteed. The lower carbon content was developed to minimize susceptibility to intergranular corrosion which may result from the carbon separation that takes place in high carbon 18-8 alloys when the metal is heated within the temperature range of 900° F.-1650° F. In welding, this temperature gradient is always encountered a slight distance on each side of the weld, in which area carbide separation takes place.

Type 304 is especially recommended for welded construction where severe corrosive conditions are encountered, such as in the dairy, chemical, paper and textile industries. This low carbon grade is not ordinarily required for welded construction subjected only to atmospheric conditions.

DATA

STAINLESS ANALYSES (Continued)

Types 304L and 316L Extra Low Carbon

Armco 18-8 ELC (Type 304L) and 18-12 Mo ELC (Type 316L) are extra low carbon alloys that offer better corrosion resistance adjacent to welds. These alloys contain a maximum of only 0.03 per cent carbon. This amount of carbon is small enough to eliminate harmful carbide precipitation adjacent to welds during the welding operation.

These extra low carbon grades are recommended only for welded equipment made for service below the lower sensitizing temperature of 800° F. — especially when corrosive conditions are severe. They are not recommended for use at high temperature.

It is not necessary to anneal welds made with the ELC types, except when specifications call for stress-relieved welds. Both 304L and 316L grades can be highly polished with no surface blemishes.

Type 309 25-12

This chromium-nickel alloy resists destructive heat scaling at temperatures as high as 2000° F. It retains considerable strength and toughness at elevated temperatures, is ductile, workable, easily welded, machinable, and has excellent corrosion resistance.

Type 309 is widely used for annealing furnace inner covers, kiln linings, furnace parts, linings and supports, oil and gas combustion chambers, regenerative and recuperative preheaters.

Type 316 18-12 Mo

This chromium-nickel alloy has a low carbon and high nickel content, and contains 2 to 4% molybdenum. Its corrosion resistance is somewhat better than chromium-nickel grades without molybdenum — particularly in reducing acid environment. The molybdenum tends to increase passivity, improves the alloy's corrosion resistance in general, and helps minimize pitting or pin hole corrosion under certain conditions. This grade has good creep strength at elevated temperatures.

Type 316 is used principally in the textile, paper, and chemical industries, especially where sulphite or various dye and bleaching solutions are present.

Types 321 and 347 18-8 Stabilized

When ordinary chromium-nickel stainless steels are heated within the range of 900° to 1600° F. as the result of welding, heating in fabrication, or heating in service, the areas subjected to these high temperatures undergo a change in structure. This change, called "carbide precipitation", involves the migration of carbon to the grain boundaries where it combines with chromium to form chromium carbides. This depletion of chromium within the grain boundaries results in a loss of corrosion resistance.

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STAINLESS ANALYSES (Continued)

Types 321 and 347

18-8 Stabilized (Continued)

The Titanium in Type 321 and the Columbium in Type 347 are strong carbide-forming elements. Because they combine with carbon more readily than does chromium, they minimize the formation of chromium carbides, thus leaving the chromium in solution. In this condition it has the most beneficial effect on corrosion resistance.

Type 321 and 347 are used principally for welded equipment which cannot be annealed and quenched after welding, and where service conditions are too severe to permit the use of low carbon 18-8 stainless steels. They are also used in welded equipment which must undergo a stress relieving anneal. These grades are suitable for equipment used in the 900°-1600° F. critical range of carbide precipitation.

Type 410

12 Chromium

This straight chromium magnetic grade can be hardened by heat treatment up to 400 Brinell. It has good creep strength and is extensively used for cold-headed screws, bolts, rods, pistons and valve parts operating at temperatures up to 850° F. Although Type 410 may stain, it will resist progressive corrosion from steam, carbonic acid, crude oil, blood, perspiration and ammonia.

Foundry flasks, cutlery, coal sizing screens, conveyor parts, coal and coke chutes, and furnace or stove parts where temperatures do not exceed about 1250° F. are a few successful applications of Type 410.

Type 416

12 Chromium Free Machining

This is a free machining grade with properties and corrosion resistance similar to those of Type 410. Because of its high sulphur content it can be machined at speeds approaching 85% of those used for Bessemer screw stock. Type 416 has become one of the most widely used stainless steels because it can be machined at high rates and it often can be placed in service in the "as machined condition" without heat treatment.

Type 420

13 Chromium .35 Carbon

This alloy, capable of heat treatment to high hardness, is used for cutlery, dental and surgical instruments, bearings and similar applications. As is the case with the other high-carbon grades, the corrosion resistance of Type 420 is best when it is in the hardened and stress relieved condition. In this condition it will have a hardness range of 470-530 Brinell. Type 420 can be machined at 45% of the speeds used for Bessemer screw stock.

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STAINLESS ANALYSES (Continued)

Type 430 14-18 Chromium

This high chromium, low carbon stainless steel has good mechanical and physical properties, good corrosion resistance to many dilute organic acids and very dilute salt solutions, and has excellent resistance to nitric acid. It withstands destructive heat scaling up to about 1550° F.

Type 430 when welded is susceptible to grain growth with some loss in ductility and toughness. For this reason it is not recommended for welded sections which will be exposed to shock or vibration in-service.

Because of its strength, toughness, and resistance to heat oxidation, as well as chemical and atmospheric corrosion, Type 430 is used in range oil burners, heat exchanger flues, oil and gas furnace combustion chambers, and annealing furnaces.

Type 430 F 14-18 Chromium Free Machining

This grade combines the high corrosion resistance of Type 430 with the excellent free machining qualities of Type 416. It is well suited for use in automatic screw machines and it may be machined at speeds better than 85% of those used for Bessemer screw stock. The properties are similar to those of Type 430 except that the good cold-forming capacity of Type 430 is sacrificed for machinability.

Although it has not been in commercial production as long as Type 416, the combination of higher corrosion and heat resistance, and excellent machinability of Type 430F has greatly extended its use when hardening or heat treatment is not required. It will not discolor in ordinary atmospheres and is therefore widely used for products which must remain bright under relatively severe conditions.

Type 440 A, B, C, 17 Chromium High Carbon

These three high carbon grades have progressively higher carbon contents. In the hardened and strain-relieved condition Type 440-A has a hardness range of 500 to 560 Brinell, Type 440-B from 520 to 590 Brinell, Type 440-C from 540 to 620 Brinell.

These alloys are used for applications where the highest physicals as well as excellent corrosion resistance are needed. Solenoid valves, abrasion resisting nozzles, high grade cutlery, are made from these grades.

Type 446 23-27 Chromium

This non-hardenable, straight chromium alloy has excellent corrosion resistance as well as the ability to withstand destructive heat scaling under oxidizing conditions at temperatures as high as 2100° F. Although slightly superior to Type 309 in resistance to oxidation, Type 446 is not as strong or ductile, nor are its welding characteristics as good. Type 446 has been used successfully under carburizing conditions.

Typical applications are furnace floor plates and oil burner combustion chambers and target plates.

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STAINLESS ANALYSES (Continued)

Type 17-4 PH and 17-7 PH

16.00 — 17.00 Chromium

These precipitation-hardening stainless steels have corrosion resistance surpassing that of the best hardenable standard stainless steels, and in some conditions equal to that of 18-8. They can be deep drawn and severely formed. They have yield strengths in tension and compression, and high tensile strengths.

Both 17-4 PH and 17-7 PH have low hardening temperatures that avert problems of scaling, distortion, and cracking. 17-7 PH is hardened by high heat in the range of 900° F. — 1400° F. 17-4 PH is hardened at 850° F. — 1150° F.

Both alloys have excellent welding characteristics, and are machinable in the annealed or solution-treated conditions, and in the hardened condition.

Type PH 15-7 MO 14.00-16.00 Chromium

This precipitation-hardening stainless steel is a new and higher strength alloy possessing an outstanding combination of room temperature and elevated temperature mechanical properties. Molybdenum is added to increase its mechanical properties over 17-7 PH at temperatures up to 1000° F.

Supplied in a wide range of sheet, strip, plate bar and wire forms, this alloy provides similar transforming and hardening characteristics to 17-7 PH during heat treatment.

Type 17-14 CU-MO

Armco 17-14 Cu-Mo Stainless Steel is a special high temperature alloy economical in price and fabrication, and outstanding in high-stress, long-time service at temperatures up to 1500° F.

This alloy was developed to supply the needs of manufacturers of aircraft, gas turbines, high temperature steam turbines, boilers, superheaters, petroleum cracking stills, reaction vessels, fasteners, and other such high temperature equipment.

Type 17-10 P

Armco 17-10 P is one of the newest stainless steel grades. It was developed for use in applications requiring high strength with low magnetic permeability.

The principal use for this new grade is in naval programs where the combination of strength and low magnetic permeability is a necessity. The nearest competitive materials are alloys that contain large percentages of extremely critical elements. Armco 17-10 P has been used as a substitute for "K" Monel and beryllium copper with a considerable saving in cost and critical elements. Competitively priced common materials are only about half as strong while comparable alloys in strength are either too expensive or too high in critical elements, or both.

This grade is a precipitation-hardening grade and is one of the chromium-nickel stainless steels that hardens by heat treatment.

DATA

STAINLESS FINISHES

STAINLESS STEEL SHEET, BAR, AND PLATE FINISHES

Finish	Name	Description	Sheet	Plate	Bar
HR	HOT ROLLED	DARK OXIDE FINISH		X	
HRA	HOT ROLLED, ANNEALED	DARK OXIDE FINISH		X	X
NO. 1	HOT ROLLED, ANNEALED PICKLED	WHITE PICKLED FINISH	X	X	X
NO. 2D	DULL FULL COLD DRAWN FINISH	SMOOTH, DULL, COLD-ROLLED FINISH			X
NO. 2B	BRIGHT FULL FINISH	SMOOTH, BRIGHT, COLD-ROLLED FINISH	X		
NO. 3	STANDARD POLISH	100 GRIT FINISH WITH COARSER POLISHING LINES THAN #4	X		
NO. 4	STANDARD POLISH	BRIGHT SATIN FINISH WITH VERY FINE POLISHING LINES	X	X	X
NO. 6	STANDARD POLISHED, TAM-PICO BRUSHED	SOFT-LUSTERED, VELVETY FINISH	X	X	
NO. 7	HIGH LUSTRE POLISH	GLOSSY, BRIGHT, BUFFED FINISH	X	X	X

CORROSION DATA

The table on the following pages contains data that gives the resistance of Stainless Steel, Types 302, 316, and 430, to various chemical media.

The key to the letters used in the table is:

- | | |
|------------------------------|---|
| Full Resistance..... | A |
| Satisfactory Resistance..... | B |
| Fair Resistance..... | C |
| Slight Resistance..... | D |
| No Resistance..... | E |

IMPORTANT NOTICE

This data should be regarded as indicative, and used as a basis for recommendation. It is not a basis for guarantee.

When questions arise concerning the stability of a metal for a specific application, call our nearest warehouse or sales office. We will be happy to help you.

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CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
ACETIC ACID, 5% Agitated	70°	A	A	A	
5% Aerated	70°	A	A	B	
5%.....	100°	A	A	D	
5%.....	180°	A	A	A	
10% Agitated	70°	A	A	A	
10% Aerated	70°	A	A	A	
10%.....	100°	A	A	.....
10%.....	180°	A	A	.....
10%.....	Boiling	A	C	.....
10%.....	60°	A	A	A	
15%.....	100°	A	A	D	
15%.....	180°	A	A	D	
15%.....	Boiling	A	C	.....
20% Agitated	70°	A	A	A	
20% Aerated	70°	A	A	A	
20%.....	180°	A	A	.....
33%.....	70°	A	A	C	
33%.....	100°	A	A	D	
33%.....	180°	A	A	.....
33%.....	Boiling	A	C	.....
40% Aerated	180°	A	A	.....
50%.....	70°	A	A	C	
50%.....	Boiling	A	C	.....
60%.....	60°	A	A	C	
60%.....	100°	A	A	D	
60%.....	180°	A	A	.....
60%.....	Boiling	B	A	.....
60%.....	70°	A	A	C	
80%.....	100°	A	A	D	
80%.....	180°	A	A	.....
80%.....	Boiling	B	A	.....
90% Aerated	180°	A	C	.....
100%.....	70°	A	A	A	
100%.....	100°	A	A	A	
100%.....	180°	A	A	C	
100%.....	Boiling	B	C	.....
100%—150-lb. Press.	400°	C	E	.....
ACETIC ANHYDRIDE					
(90% Anhydride)	70°	A	A	A	
(90% Anhydride)	180°	A	A	B	
(90% Anhydride)	Boiling	A	A	C	
Aerated (90% Anhydride)	180°	C	D	.....
60% Anhydride	180°	B	B	.....
30% Anhydride	180°	B	D	.....
ACETIC ACID VAPORS,					
30%.....	Hot	B	C	.....
100%.....	Hot	C	E	.....
ACETONE	70°	A	A	B	
ACETYL CHLORIDE	Cold	B	B	.....
ACETYLENE	Boiling	B	B	.....
	70°	A	A	A	

Continued on next page

DATA

CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
ACID SALT MIXP					
10% H ₂ SO ₄ Sp. G. 1.07					
+10% CuSO ₄ • 5 H ₂ O	Boiling		A	A	...
10% H ₂ SO ₄ Sp. G. 1.07					
+2% FeSO ₄ • 7 H ₂ O	Boiling		A	A	...
ALCOHOL, ETHYL	70°		A	A	A
	Boiling		A	A	A
ALCOHOL, METHYL	70°		A	A	A
	150°		B	*C	C
ALUMINUM, Molten	1400°		E	E	E
ALUMINUM ACETATE					
Saturated	70°		A	A	...
Saturated	Boiling		A	A	...
ALUMINUM CHLORIDE					
10% Quiescent	70°		C	D	D
25% Quiescent	70°		C	D	D
ALUMINUM FLUORIDE	70°		C	D	D
ALUMINUM HYDROXIDE					
Saturated	70°		A	*A	*A
ALUMINUM SULPHATE,					
5%	150°		A	*A	*A
10%	70°		A	*A	*B
10%	Boiling		A	*B	*C
Saturated	70°		A	*A	*D
Saturated	Boiling		A	*B	*E
ALUMINUM CHROMIUM					
Sulphate 5% Sp. G. 1.6	70°		A	*A	...
	Boiling		...	*E	...
ALUMINUM POTASSIUM					
SULPHATE					
(Alum), 2%	70°		A	*A	*A
10%	70°		A	*A	*B
10%	Boiling		A	*B	*C
Saturated	Boiling		B	*C	*D
AMMONIA (Dry or Moist)					
All concentrations	70-212°		A	A	A
AMMONIA (Anhydrous)	800° up		E	E	E
AMMONIUM					
HYDROXIDE	70°		A	A	A
	Boiling		A	A	A
AMMONIUM					
BICARBONATE	70°		A	A	...
	Hot		A	A	...
AMMONIUM BROMIDE,					
5%	70°		A	A	...
AMMONIUM CARBONATE					
1% Quiescent	70°}		A	A	A
5% Quiescent	70°}		A	A	A
1% Aerated	70°}		A	A	A
5% Aerated	70°}		A	A	A
1% Agitated	70°}		A	A	A
5% Agitated	70°}		A	A	A

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See notes page 304.

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CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
AMMONIUM CHLORIDE					
1% Quiescent.....	70°	A	*A	*A	
1% Aerated.....	70°	A	*A	*A	
1% Agitated.....	70°	A	*A	*A	
10%.....	Boiling	*A	*A	*A	
20%.....	Boiling	*A	*A		
28%.....	Boiling	*A	*B		
50%.....	Boiling	*A	*B		
AMMONIUM CHLOROSTANNATE					
Saturated.....	70°	A	B		
Saturated.....	140°	C	E		
AMMONIUM NITRATE					
All Conc. Agitated}	70°	A	A	A	
Aerated}					
Saturated.....	Boiling	A	A	A	
AMMONIUM OXALATE,					
5%.....	70°	A	A	A	
AMMONIUM PERCHLORATE					
10%.....	Boiling	A	A		
AMMONIUM PERSULPHATE, 5%					
70°	A	A	A		
AMMONIUM PHOSPHATE,					
5%.....	70°	A	A	A	
AMMONIUM POTASSIUM					
Sulphate (Alum)					
Dilute and Saturated	Various	A	*A	*B	
AMMONIUM SULPHATE					
1% Aerated.....	70°	A	A	A	
1% Agitated.....	70°	A	A	A	
5% Aerated.....	70°	A	A	A	
5% Agitated.....	70°	A	A	A	
10%.....	Boiling	*A	*B		
Saturated.....	Boiling	A	B		
AMMONIUM SULPHITE					
	Boiling	A	A		
ANILINE, 3%					
	70°	A	A	A	
Concentrated Crude	70°	A	A	A	
ANILINE					
HYDROCHLORIDE.....	70°	D	E	E	
ANTIMONY, Molten					
	1100°	E	E	E	
ANTIMONY SULPHIDE,					
Molten.....	1200-1600°	E	E	E	
ANTIMONY TRICHLORIDE					
	70°	D	E	E	
ARSENIC ACID					
	150°	A	A		
BARIUM CARBONATE					
	70°	A	A	A	
BARIUM CHLORIDE, 5%					
Saturated.....	70°	A	A	*A	
Aqueous Solution.....	Hot	*A	*B	*A	

Continued on next page

See notes page 304.

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CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
BARIUM HYDROXIDE					
All concentrations.....	Cold and Hot	A	A	A	
BARIUM NITRATE					
Aqueous Solution.....	Hot	A	A		
BARIUM SULPHATE					
(Barytes-Blanc Fixe).....	70°	A	A	A	
BEER (Barley Malt & Hops).....	70°	A	A		
3.5%-4.5% Alcohol.....	160°	A	A		
BENZENE (Benzol).....	70°	A	A	A	
	Hot	A	A	A	
BENZOIC ACID.....	70°	A	A	A	
BLOOD (Meat Juices).....	Cold	A	*A	A	
BORAX, 5%	Hot	A	A	A	
BORACIC ACID, 5%	Hot or Cold	A	A	A	
BORIC ACID, Saturated	Boiling	A	A	A	
BROMINE—BROMINE					
WATER.....	70°	D	E	E	
BUTTERMILK.....	70°	A	A	A	
BUTYRIC ACID, 5%.....	70°	A	A	A	
5%.....	150°	A	A	A	
Aqueous Solution					
Sp. G. .964.....	Boiling	A	A	A	
CALCIUM CARBONATE.....	70°	A	A	A	
CALCIUM CHLORATE,					
Dilute.....	Cold and Hot	A	A		
CALCIUM CHLORIDE,					
Dilute.....	70°	*A	*B	*C	
Conc. Solutions.....	70°	*A	*B	*C	
CALCIUM					
CHLOROHYPOCHLORITE					
(Bleaching Powder), 1%.....	70°	‡B	‡C		
5%.....		‡C	‡C		
CALCIUM					
HYPOCHLORITE, 2%.....	70°	‡A	*B	‡C	
Aqueous Solution					
Sp. G. 1.04.....	100°	‡A	‡C	‡C	
CALCIUM CHLORATE					
Dilute Solution.....	70°	A	A		
Dilute Solution.....	Hot	A	A		
CALCIUM HYDROXIDE,					
10%.....	Boiling	A	A		
20%.....	Boiling	A	A		
50%.....	Boiling	B	C		
CALCIUM SULPHATE,					
Saturated.....	70°	A	A	A	
CADMIUM.....	Molten	C	C		
CAMPHOR.....	70°	A	A	A	
CANE JUICE (Sugar Cane).....	Hot	A	A		
CARBOLIC ACID (Phenol)					
C.P. Plus 10% water.....	Boiling	A	A	A	
C.P.....	70°	A	A	A	

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CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
CARBOLIC ACID (Phenol) (Continued)					
C.P.	(Boil)	360°	A	A	....
Crude.....		212°	A	A	....
Crude.....	Boiling		A	A	....
CARBON BISULPHIDE	70°		A	A	A
CARBON MONOXIDE GAS	1400°		A	A	A
	1600°		A	A	A
CARBON TETRA-					
CHLORIDE, C.P.	70°		A	A	A
C.P.	Boiling		A	A	....
Commercial plus 1% water	Boiling	*B	....	....	....
Commercial plus 1% HCl	Boiling	*B	....	....	....
CARBONATED WATER					
(Carbonic Acid).....			A	A	A
CARBONATED BEVERAGES					
Various concentrations.....	Cold		A	A	....
CARBONIC ACID					
All concentrations.....	Cold and Hot		A	A	A
CARNALLITE—Cold					
Saturated Solution.....	Boiling		B	B	....
(KCl • MgCl ₂ • 6H ₂ O)					
CAUSTIC SODA (See Sodium Hydroxide)					
CHINOSOL ANTISEPTIC					
Aqueous Solution, 1-500 dilution.....	70°		A	A	....
CELLULOSE.....			A	D	E
CHLORACETIC ACID.....	70°		C	A	C
CHLORINE GAS, Dry.....	70°		A	D	E
Moist.....	70°		C	E	E
	212°		D		
CHLORINATED WATER					
Saturated.....	70°		‡B	‡C	D
CHLORIC ACID.....	70°		D	E	E
CHLOROBENZENE (Phenyl Chloride), C.P.	70°		A	A	A
	Boiling		A	A	....
CHLOROFORM.....	70°		A	A	A
CHLOROSULPHONIC ACID					
Dilute.....	70°		E	E	E
CHROMIC ACID,					
5% C.P.	70°		A	A	B
10% C.P.	70°		B	B	....
10% C.P.	Boiling		B	C	D
50% C.P.	70°		B	B	....
50% C.P.	Boiling		....	C	....
Commercial, 50% (Cont. SO ₃).....	70°		A	A	....
Commercial, 50% (Cont. SO ₃).....	Boiling		C	*D	D

Continued on next page

See notes page 304.

DATA

CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
CHROMIUM PLATING BATH					
CIDER		70°	A	A	..
CITRIC ACID,					
5% Quiescent		70°	A	A	A
5% Quiescent		150°	A	A	A
10%		70°	A	A	A
10%		Boiling	A	B	..
15%		70°	A	A	..
15%		Boiling	A	B	B
25%		70°	A	A	..
25%		Boiling	A	D	..
50%		70°	A	A	..
50%		Boiling	A	D	..
Conc.		Boiling	B	C	..
5%—45-lb. sq. in. Press.		284°	B	D	..
COCA-COLA SYRUP (Pure)		70°	A	A	A
COFFEE		Boiling	A	A	A
COPPERAS, (See Ferrous Sulphate)					
COPPER ACETATE					
Sat. Solution		70°	A	A	A
COPPER CARBONATE Sat.					
Sol. in 50% NH ₄ OH			A	A	A
COPPER CHLORIDE					
(Cupric Chloride)					
1% Agitated		70°	*A	*B	*B
1% Aerated		70°	*A	*B	*B
5% Agitated		70°	*B	*C	*B
5% Aerated		70°	*C	*E	*E
COPPER CYANIDE					
(Cupric Cyanide)					
Sat. Solution		Boiling	A	A	A
COPPER NITRATE					
(Cupric Nitrate)					
1% Quiescent		70°	A	A	A
1% Agitated		70°	A	A	A
1% Aerated		70°	A	A	A
5% Quiescent		70°	A	A	A
5% Agitated		70°	A	A	A
5% Aerated		70°	A	A	A
50% Aqueous Sol.		Boiling	A	A	..
COPPER SULPHATE					
(Cupric Sulphate)					
5% Agitated		70°	A	A	A
5% Aerated		70°	A	A	A
Sat. Solution		Boiling	A	A	..
CREAM OF TARTAR		Cold and Hot	A	A	..
CREOSOTE (Coal Tar)		Hot	A	A	..
CREOSOTE OIL		Hot	A	A	..
CYANOGEN GAS		70°	A	A	..

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DATA

CORROSION DATA
(Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
DICHLOROETHANE.....	Boiling		A	A	...
DINITROCHLOROBENZENE					
Melted and Solidified.....	70°		A	A	A
DISTILLERY WORT.....	70°		A	A	A
DYEWOOD LIQUOR.....	70°		A	§A	...
 EPSOM SALT (Magnesium Sulphate).....					
SULPHATE).....	Hot and Cold		A	A	A
ETHER.....	70°		A	A	A
ETHYL CHLORIDE.....	70°		A	A	A
ETHYLENE CHLORIDE.....	70°		A	A	...
 FERRIC CHLORIDE					
1% to Saturation.....	70°		E	E	E
FERRIC HYDROXIDE					
(Hydrated Iron Oxide).....	70°		A	*A	...
FERRIC NITRATE,					
1% Quiescent.....	70°		A	A	A
5% Quiescent.....	70°		A	A	A
1% Agitated.....	70°		A	A	A
5% Agitated.....	70°		A	A	A
1% Aerated.....	70°		A	A	A
5% Aerated.....	70°		A	A	A
FERRIC SULPHATE					
1% Quiescent.....	70°		A	A	A
1% Aerated.....	70°		A	A	A
1% Agitated.....	70°		A	A	A
5% Quiescent.....	70°		A	A	A
5% Aerated.....	70°		A	A	A
5% Agitated.....	70°		A	A	A
10%.....	Boiling		A	A	...
FERROUS SULPHATE					
10%.....	70°		A	*A	*A
10%.....	Boiling		A	*A	...
FLUORINE (Gas).....					
70°			E	E	E
FORMALINE					
(40% Formaldehyde).....	70°		A	A	A
FORMIC ACID, 5%.....	70°		A	B	B
5%.....	150°		A	B	B
10%.....	70°		A	B	B
10%.....	Boiling		A	A	E
FORMIC ACID, 50%.....	70°		A	B	B
50%.....	Boiling		A	A	E
90%.....	Boiling		A	A	...
100%.....	70°		A	A	...
100%.....	Boiling		B	B	...
FRUIT JUICES.....	70°		A	A	A
FUEL OIL.....	Hot		A	A	...
Cont. Sulphuric Acid.....			B	C	...
FURFURAL.....	70°		A	A	...

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See notes page 304.

DATA

CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
GALLIC ACID, 5%	70°	A	A	A	
5%	150°	A	A	A	
Sat. at 212° F.	Boiling	A	A	...	
GASOLINE	70°	A	A	A	
GELATIN	Cold to 140°	A	A	A	
GLAUBER'S SALT (See Sodium Sulphate)					
GLUE, DRY	70°	A	A	A	
Acid Solution	70°	A	*B	...	
Acid Solution	140°	A	*B	...	
GLYCERINE	70°	A	A	A	
GYPSUM (See Calcium Sulphate)					
HYDROCHLORIC ACID,					
All Conc.	70°	E	E	E	
HYDROBROMIC ACID					
All concentrations	Cold and Hot	E	E	E	
HYDROCYANIC ACID	70°	A	A	C	
HYDROFLUORIC ACID	70°	D	E	...	
HYDROFLUORIC ACID					
All concentrations	Cold and Hot	E	E	E	
HYDROGEN PEROXIDE	70°	A	§A	§A	
	Boiling	A	§B	§B	
HYDROGEN SULPHIDE,					
Dry	70°	A	A	A	
Wet	70°	§A	§C	§C	
INK	70°	A	§B	...	
IODINE	70°	D	E	E	
IODOFORM	70°	A	A	...	
KEROSENE	70°	A	A	A	
KETSUP, Quiescent	70°	A	*A	*A	
Quiescent	150°	A	*A	*A	
LACTIC ACID, 1%	70°	A	A	A	
1%	Boiling	A	A	B	
5%	70°	A	A	A	
5%	150°	A	B	B	
5%	Boiling	A	B	B	
10%	70°	A	A	B	
10%	150°	A	B	E	
10%	Boiling	A	B	...	
Conc.	70°	A	A	...	
Conc.	Boiling	B	C	...	
LARD	70°	A	A	A	
LEAD, Molten	750°	B	B	B	
LEAD, ACETATE, 5%	Boiling	A	A	...	
LINSEED OIL	70°	A	A	A	
Plus 3% H ₂ SO ₄	390°	A	A	...	
LYSOL	70°	A	A	D	

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See notes page 304.

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DATA

CORROSION DATA
(Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
MAGNESIUM CARBONATE					
All concentrations.....	Cold and Hot	A	A	A	
MAGNESIUM CHLORIDE					
1% Quiescent.....	70°	A	*A	*A	
1% Quiescent.....	Hot	*B	*C		
5% Quiescent.....	70°	A	*A	*A	
5% Quiescent.....	Hot	*B	*C		
MAGNESIUM HYDROXIDE					
Thick Suspension.....	70°	A	A		
MAGNESIUM NITRATE					
All concentrations.....	Cold and Hot	A	A	A	
MAGNESIUM OXYCHLORIDE.....	70°	*B	*C		
MAGNESIUM SULPHATE					
(See Epsom Salt).....					
MALIC ACID.....	Cold and Hot	A	A	A	
MANGANESE CARBONATE					
All concentrations.....	Cold and Hot	A	A	A	
MASH.....	Hot	A	A		
MAYONNAISE.....	70°	A	*A		
MERCURY.....		A	A		
MERCURIC CHLORIDE					
Dilute Solution.....	70°	*D	*E	E	
MERCUROUS NITRATE					
All concentrations.....	Cold and Hot	A	A	A	
METHANOL (See Alcohol, Methyl).....					
METHYLENE CHLORIDE,					
40%.....	Cold and Hot	A	A		
MILK, Fresh or Sour.....	70°	A	A	A	
	Boiling	A	A		
MINE WATER-ACID.....	60°	*A	*A		
MOLASSES.....		A	A	A	
MOLYBDIC ACID, 5%.....	70°	A	A		
MUSTARD.....	70°	A	*A	*A	
MURIATIC ACID.....	70°	E	E	E	
NAPHTHA, Pure.....	70°	A	A	A	
Crude.....	70°	A	A		
NAPHTHALENESULFONIC ACID.....	70°	A	A		
NICKEL CHLORIDE, Solution.....	70°	*A	*A		
NICKEL NITRATE					
All concentrations.....	Cold and Hot	A	A	A	
NICKEL SULPHATE.....	Cold and Hot	A	A		
NITER CAKE.....	Fused	A	B	B	
NITRATING SOLUTIONS.....	Cold and Hot	B	B	B	
NITRIC ACID, 5%.....	70°	A	A	A	
5%.....	Boiling	A	A	C	
20%.....	70°	A	A	A	
20%.....	Boiling	A	A	B	

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See notes page 304.

DATA

CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
NITRIC ACID (Continued)					
40%		70°	A	A	A
40%		Boiling	A	A	B
50%		70°	A	A	A
50%		Boiling	A	A	B
65%		70°	A	A	A
65%		Boiling	B	B	B
Conc.		70°	A	A	A
Conc.		Boiling	B	B	C
Fuming Conc.		70°	A	A	A
Fuming Conc.		110°	A	A	A
Fuming Conc.		Boiling	D	D	D
NITROUS ACID, 5%		70°	A	A	A
OILS, Crude					
OILS, Vegetable, Mineral		Cold and Hot	\$A	\$A	\$A
OLEIC ACID		Cold and Hot	A	\$A	NA
		70°	A	*A	*B
		300°	A	*A	*B
		400°	A	*A	..
OXALIC ACID, 5%					
		70°	A	A	A
5%		Boiling	A	A	A
10%		70°	A	A	B
10%		Boiling	C	D	E
25%		Boiling	C	D	..
50%		Boiling	C	D	..
PARAFFIN					
PAREGORIC COMPOUND		Cold and Hot	A	A	A
PHENOL (See Carbolic Acid)		70°	A	A	..
PHENOLIC RESINS		Cold and Hot	A	A	..
PETROLEUM ETHER			A	A	A
PHOSPHORIC ACID, 1%					
1%		70°	+A	+A	+A
1%—45-lb. Press.		Boiling	A	A	..
5% Quiescent		284°	A	A	..
5% Agitated		70°	A	A	A
5% Aerated		70°	A	A	A
10% Quiescent		70°	A	A	A
10% Agitated		70°	A	A	A
10% Aerated		70°	A	A	A
10%		Boiling	A	A	B
25%		Boiling	B	A	B
45%		Boiling	B	B	C
50%		Boiling	B	B	B
80%		70°	B	B	B
80%		230°	C	E	E
85%		Boiling	C	E	E
PHOSPHORIC ANHYDRIDE					
Dry		Cold and Hot	A	A	..

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CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
PHOTOGRAPHIC SOLUTIONS					
Film and Paper Developers	70°	A	A	C	
Hypo (Acid Fixing Baths)	70°	\$A	\$A	D	
Other Solutions (Toners, Reducers, Tray Cleaners, etc.)	Details on request				
PICRIC ACID	70°	A	A	A	
PINE TAR OIL	Cold and Hot	A	A		
POTASH (See Potassium Hydroxide)					
POTASSIUM BICHROMATE	25% 70°	A	A	A	
	25% Boiling	A	A		
POTASSIUM BROMIDE	70°	*A	*B		
POTASSIUM CARBONATE					
1% Quiescent	70°	A	A	A	
	Agitated				
	Aerated				
50%	Boiling	A	A		
POTASSIUM CHLORATE					
Sat. at 212°	Boiling	A	A	A	
POTASSIUM CHLORIDE					
1% Quiescent	70°	A	A	*A	
1% Agitated	70°	A	A	*A	
1% Aerated	70°	A	A	*A	
5% Quiescent	70°	A	A	*A	
5% Agitated	70°	A	A	*A	
5% Aerated	70°	A	A	*A	
5%	Boiling	A	A		
POTASSIUM DICHROMATE					
All concentrations (neutral)	Cold and Hot	A	A	A	
POTASSIUM FERRICYANIDE	5% 70°	A	A	A	
25%	70°	A	A		
25%	Boiling	A	A		
POTASSIUM FERROCYANIDE	5% 70°	A	A	A	
POTASSIUM HYDROXIDE					
5% Quiescent	70°	A	A	A	
5% Agitated	70°	A	A	A	
5% Aerated	70°	A	A	A	
27%	Boiling	A	A		
50%	Boiling	A	R		
POTASSIUM HYPOCHLORITE					
Cone.	70°	B	B		
POTASSIUM IODIDE					
All concentrations	Cold and Hot	A	A		

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DATA

CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
POTASSIUM NITRATE					
Quiescent					
1% Agitated	70°		A	A	A
Aerated					
Quiescent					
5% Agitated	70°		A	A	A
Aerated					
50%	70°		A	A	...
50%	Boiling		A	A	...
Molten	1022°		A	A	...
POTASSIUM OXALATE					
POTASSIUM PERMANGANATE					
5%	70°		A	A	A
10%	Boiling		A	A	...
POTASSIUM SULPHATE					
1% Quiescent	70°		A	A	A
1% Agitated	70°		A	A	A
1% Aerated	70°		A	A	A
5% Quiescent	70°		A	A	A
5% Agitated	70°		A	A	A
5% Aerated	70°		A	A	A
5%	Hot		A	A	...
PYROGALLIC ACID					
QUININE SULPHATE,					
Dry			A	A	B
QUININE BISULPHATE,					
Dry			A	B	B
ROSIN, Molten					
SAUERKRAUT BRINE					
SEA WATER	70°		A	E	...
SEWAGE	70°		*A	*A	*C
SILVER BROMIDE			§A	§A	...
SILVER CHLORIDE			*A	*B	*C
SILVER NITRATE, 10%	70°		E	E	E
10%	Boiling		A	A	...
SOAP	70°		A	A	A
SODIUM ACETATE,					
Moist			A	*A	A
SODIUM CARBONATE, 5%					
70°			A	A	A
5%	150°		A	A	A
5%	Boiling		A	A	A
50%	Boiling		A	A	...
Molten	1650°		E	E	...
SODIUM BICARBONATE					
All concentrations	70°		A	A	A
5% Quiescent	150°		A	A	A
SODIUM BISULPHATE					
All concentrations (neutral)	Cold and Hot		A	*A	...

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DATA

CORROSION DATA
(Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
SODIUM BORATE					
All concentrations.....	Cold and Hot	A	A	A	
SODIUM CHLORATE					
25%.....	Cold and Hot	A	A		
SODIUM CHLORIDE					
5% Quiescent.....	70°	A	*A	*B	
5% Quiescent.....	150°	A	*A	*B	
20% Aerated.....	70°	A	*A		
Saturated.....	70°	A	*A		
Saturated.....	Boiling	A	*B		
SODIUM CITRATE					
All concentrations.....	Cold and Hot	A	A		
SODIUM FERRICYANIDE					
5% (neutral).....	Cold and Hot	*A	*A		
SODIUM FLUORIDE, 5%	70°	*A	*B	C	
SODIUM HYDROXIDE,					
20%.....	Boiling	A	A		
30%.....	Boiling	B	B		
Molten.....	600°	B	B		
SODIUM HYPOCHLORITE,					
5%.....	70°	‡A	‡B	‡C	
SODIUM LOCATE, 10%	Cold and Hot	A	A		
SODIUM NITRATE					
All concentrations.....	Cold and Hot	A	A	A	
SODIUM NITRATE.....	Fused	A	B	C	
SODIUM NITRITE					
All concentrations.....	Cold and Hot	A	A		
SODIUM PERCHLORATE,					
10%.....	70°	A	A		
10%.....	Boiling	A	A		
SODIUM PEROXIDE, 10%	70°	A	A		
10%.....	200°	A	A		
SODIUM PHOSPHATE					
5%.....	Cold and Hot	A	A		
SODIUM SALICYLATE					
All concentrations.....	70°	A	A	A	
SODIUM SILICATE					
SODIUM SULPHATE, 5%	Cold and Hot	A	A		
Saturated.....	Boiling	A	A		
SODIUM SULPHITE, 5%	70°	A	A	C	
10%.....	150°	A	A		
25%.....	Boiling	A	A	A	
50%.....	Boiling	A	A		
SODIUM HYPOSULPHITE,					
25%.....	70°	A	‡A	B	
25%.....	Boiling	A	A		
SODIUM SULPHIDE,					
Saturated.....	70°	A	*B		
SOY BEAN OIL.....	Cold and Hot	A	A		
STANNIC CHLORIDE,					
Sp. G. 1.21.....	70°	C	D		
Sp. G. 1.21.....	Boiling	D	E		

Continued on next page

See notes page 304.

DATA

CORROSION DATA (Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
STANNOUS CHLORIDE, Saturated.....	120° Boiling	A	B E	....	....
STARCH, Aq. Solution.....		A	A	....	....
STEARIC ACID.....		A	A	A	....
STRONTIUM HYDROXIDE.....		A	A	....	....
STRONTIUM NITRATE, Solution.....	Hot	A	A	....	....
SUGAR, Juice.....	Hot	A	A	A	....
SULPHUR CHLORIDE.....	Cold and Hot	E	E	E	....
SULPHUR, Moist.....	70° Molten.....	*A A	*B A	*B A	....
Molten.....	266°	C	C	....	....
SULPHUR.....	833°				
MONOCHLORIDE.....	70°	A	A	....	....
SULPHUR DIOXIDE GAS, Moist.....	70°	A	B	C	....
Gas.....	575°	A	A	A	....
SULPHURIC ACID, 5%.....	70° Boiling	B C	C E	C E	....
10%.....	70°	B	D	E	....
10%.....	Boiling	C	D	E	....
50%.....	70°	C	E	E	....
50%.....	Boiling	D	D	A	....
Conc.....	70°	A	A	D	....
Conc.....	Boiling	D	D	D	....
Conc.....	300°	E	E	E	....
Fuming.....	70°	B	C	....	....
SULPHUROUS ACID, Saturated.....	70°	B	C	C	....
Saturated, 60-lb. Press.....	250°	B	C	C	....
Saturated, 70-125-lb. Press.....	310°	C	C	C	....
Saturated, 150-lb. Press.....	375°	C	C	C	....
Spray.....	70°	*D	*D	....	....
SWEET WATER.....	Hot	A	A	*A	....
SYRUP.....	Hot	A	A	....	....
TANNIC ACID.....	70° 150°	A A	A B	A A	....
TANNING LIQUOR.....	70°	A	A	....	....
TAR.....		A	A	....	....
TARTARIC ACID, 10%.....	70° Boiling	A A	A A	A B	....
10%.....	Boiling	A	A	....	....
50%.....	Boiling	A	A	....	....
Saturated at 212°.....	Boiling	....	E	....	....
TIN, Molten.....		C	C	C	....
TRICHLORACETIC ACID.....	70°	D	E	E
TUNG OIL.....	Cold and Hot	A	A
TURPENTINE OIL.....	95°	A	A
URIC ACID.....	70°	A	A

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OKLAHOMA

DATA

CORROSION DATA
(Continued)

Substance	Condition	Temp. F.	Type 316	Type 302	Type 430
VARNISH.....	70°	A	A	A	
	Hot	A	A		
VEGETABLE JUICES.....		A	A		
VINEGAR, Quiescent.....	70°	A	A	A	
Agitated.....	70°	A	A	A	
Aerated.....	70°	A	A	A	
	Hot	A	A		
VINEGAR FUMES.....	70°	A	B	B	
WHISKEY.....		A	A		
WINE, in all phases of processing and storage.....	75°	A	A	A	
WOOD PULP.....		A	A		
WOOD PULP LIQUORS					
Digestive Liquors (3% Ca $(HSO_4)_2$ +2% H_2SO_4 + SO_2 +Air).....	Boiling	A	E		
Black Waste Liquors (Alkaline) Fired.....	1800°	E	E	E	
Black Waste Liquors.....	Boiling	A	A	A	
WORT.....		A	A		
YEAST.....		A	A		
ZINC, Molten.....		E	E	E	
ZINC, CHLORIDE, 5%.....	70°	A	A	*A	
5%.....	Boiling	*A	*B	*B	
20%.....	70°	A	A	*A	
20%.....	Boiling	A	B	*E	
70%.....	70°	A	A		
70%.....	Boiling	A	D		
ZINC CYANIDE, Moist.....	70°	A	A		
ZINC NITRATE, Solution.....	Hot	A	A		
ZINC SULPHATE, 5%.....	70°	A	A	A	
25%.....	Boiling	A	A		
Saturated.....	70°	A	A	A	

*Subject to pitting at air line or when allowed to dry.

†Keep solutions alkaline.

‡Not recommended for standing baths.

§May attack when sulphuric acid is present.

+May attack when hydrochloric acid is present.

DATA

TECHNICAL PROPERTIES OF POPULAR GRADES OF STAINLESS STEELS

Grade—Type Number	Type 302	Type 303†	
PHYSICAL PROPERTIES			
Density, lb./cu. in.	0.29	0.29	
Mod. of Elasticity in Tension $\times 10^6$ p.s.i.	28.0	28.0	
Structure	Austenitic	Austenitic	
Specific Heat, B.t.u./° F./lb. 32-212° F.	0.12	0.12	
Thermal Conductivity, /212° F. B.t.u./sq. ft./hr./° F./932° F.	9.4 12.4	9.4 12.4	
Mean Coefficient of Thermal Expansion per ° F. $\times 10^{-6}$	{ 32-212° F. 32-600° F. 32-1000° F. 32-1200° F.	{ 9.6 9.9 10.2 10.4	{ 9.6 9.9 10.2 10.4
Melting Point Range	2550-2590° F.	2550-2590° F.	
ELECTRICAL PROPERTIES			
Magnetic Permeability, Annealed Elec. Resistivity, microhms-cm, 70° F.	Non-magnetic $\mu = 1.003$ 72.0	Non-magnetic $\mu = 1.003$ 72.0	
MECHANICAL PROPERTIES			
Brinell Hardness (Bars)	{ Annealed Heat Treated Cold Drawn	135-185 180-330	130-150 180-330
Rockwell Hardness (Sheet or Strip)	{ Annealed Heat Treated Cold Rolled	75-90 R _B 10-35 R _C	72-80 R _B
Ultimate Tensile Strength, lbs./sq. in.	{ Annealed Heat Treated Cold Worked*	80,000-100,000 100,000-180,000	80,000-100,000 100,000
Yield Point, lbs./sq. in.	{ Annealed Heat Treated Cold Worked*	35,000-50,000 50,000-150,000	35,000-50,000 60,000
Elongation in 2 inches	{ Annealed Heat Treated Cold Worked*	60-55% 50-10%	60-50% 40%
Reduction of Area	{ Annealed Heat Treated Cold Worked*	60-55% (Bars)	60-55% (Bars) 53%
Impact Strength, Izod Value, ft. lbs.	{ Annealed Heat Treated	110-70	110-70
Ductility, Olsen, inches	{ Annealed Annealed	0.400-0.425	.....
Creep Strength, Life of 10,000 hrs. with 1% Elongation, lbs. per sq. in.	{ At 1000° F. At 1100° F. At 1200° F. At 1300° F.	17,000 12,000 7,000 4,000	16,500 11,500 6,500 3,500
Strength at Elevated Temps., Short Time Tests, lbs./sq. in.	{ 1300° F. 1500° F. 1700° F.	36,000 22,000 13,500	34,000 20,000 12,500
HEAT TREATMENT			
Full Anneal		Cool rapidly from 1850-2050° F.	Cool rapidly from 1850-2050° F.
Process Anneal		Same as full	Same as full
Hardening—Quench from		Non-hardening	Non-hardening
Tempering		Non-hardening	Non-hardening
Initial Forging	{ Start Finish	2200° F. Over 1700° F.	2200° F. Over 1700° F.†
HEAT RESISTANCE			
Scaling Temperature	{ Continuous Service Intermittent Service	1600° F. 1450° F.	1600° F. 1450° F.
WELDING PROPERTIES			
MACHINING PROPERTIES , Compared to Bessemer Screw Stock No. B1112			
DRAWING OR STAMPING			

*These mechanical property values apply to cold rolled sheet or strip in Type 430 and all Type 300 series except Type 303. In Type 303 and all of Type 400 series with the exception of Type 430, these representative mechanical property values apply to annealed and cold drawn one inch diameter bar stock.

†This analysis designed for machining applications and is not recommended for forging operations requiring severe deformation.

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DATA

TECHNICAL PROPERTIES OF POPULAR GRADES OF STAINLESS STEELS (Continued)

Grade—Type Number	Type 309	Type 310
PHYSICAL PROPERTIES		
Density, lb./cu. in.	0.29	0.29
Mod. of Elasticity in Tension $\times 10^6$ p.s.i.	29.0	29.0
Structure	Austenitic	Austenitic
Specific Heat, B.t.u./° F./lb. 32-212° F.	0.12	0.12
Thermal Conductivity, (212° F. B.t.u./sq. ft./hr.)/° F./ft. (932° F.)	8.0 10.8	8.0 10.8
Mean Coefficient of Thermal Expansion per ° F. $\times 10^{-6}$ (32-1200° F.)	8.3 9.3 9.6 10.0	8.0 9.0 9.4 9.7
Melting Point Range	2550-2650° F.	2550-2650° F.
ELECTRICAL PROPERTIES		
Magnetic Permeability, Annealed	Non-magnetic	Non-magnetic
Elec. Resistivity, microhms-cm, 70° F.	$\mu = 1.003$ 78.0	$\mu = 1.003$ 79.0
MECHANICAL PROPERTIES		
Brinell Hardness (Bars)	140-185	145-210
Rockwell Hardness (Sheet or Strip)	75-90 RB	80-95 RB
Ultimate Tensile Strength, lbs./sq. in.	90,000-110,000	90,000-100,000
Yield Point, lbs./sq. in.	40,000-60,000	40,000-60,000
Elongation in 2 inches	60-50%	55-45%
Reduction of Area (Bars)	65-50% (Bars)	60-50% (Bars)
Impact Strength, Izod Value, ft. lbs. (Heat Treated)	100	90
Ductility, Olsen, inches (Annealed)	7-8	.....
Creep Strength, Life of 10,000 hrs. with 1% Elongation, lbs. per sq. in.	(At 1000° F.) (At 1100° F.) (At 1200° F.) (At 1300° F.)	17,000 13,000 8,500 4,500
Strength at Elevated Temps., Short Time Tests, lbs./sq. in.	(1300° F.) (1500° F.) (1700° F.)	45,000 28,000 16,000
HEAT TREATMENT		Cool rapidly from 1900-2050° F.
Full Anneal		Cool rapidly from 1900-2100° F.
Process Anneal		Same as full
Hardening—Quench from		Non-hardening
Tempering		Non-hardening
Initial Forging (Start Finish)		2150° F. Over 1800° F.
HEAT RESISTANCE		2150° F. Over 1800° F.
Scaling Temperature	Continuous Service Intermittent Service	2000° F. 1800° F.
WELDING PROPERTIES		Good Tough Welds
MACHINING PROPERTIES , Compared to Bessemer Screw Stock No. B1112		About 45%
DRAWING OR STAMPING		Good

*These mechanical property values apply to cold rolled sheet or strip in Type 430 and all Type 300 series except Type 303. In Type 303 and all of Type 400 series with the exception of Type 430, these representative mechanical property values apply to annealed and cold drawn one inch diameter bar stock.

DATA

TECHNICAL PROPERTIES OF POPULAR GRADES OF STAINLESS STEELS (Continued)

Grade—Type Number	Type 316	Type 347
PHYSICAL PROPERTIES		
Density., lb./cu. in.	Type 317 Same Except Analysis 0.29	0.29
Mod of Elasticity in Tension $\times 10^6$ p.s.i.	28.0	28.0
Structure	Austenitic	Austenitic
Specific Heat., B.t.u./° F./lb. 32-212° F.	0.12	0.12
Thermal Conductivity B.t.u./sq. ft./hr./° F. { 212° F. 932° F.	9.4 12.4	9.3 12.8
Mean coefficient of Thermal Expansion per ° F. $\times 10^{-6}$ 32-1000° F. 32-1200° F.	8.9 9.0 9.7 10.3	9.3 9.5 10.3 10.6
Melting Point Range	2500-2550° F.	2550-2600° F.
ELECTRICAL PROPERTIES		
Magnetic Permeability, Annealed Elec. Resistivity, microhms-cm. 70° F.	Non-magnetic $\mu = 1.003$ 74.0	Non-magnetic $\mu = 1.02$ 72.0
MECHANICAL PROPERTIES		
Brinell (Annealed)	135-185	135-185
Hardness { Heat Treated (Bars) { Cold Drawn	180-300	.....
Rockwell -	70-90 R _B	70-90 R _B
Hardness { Heat Treated (Sheet or strip) { Cold Rolled	10-30 R _C	10-35 R _C
Ultimate Tensile Strength, lbs./sq. in.	80,000-95,000 100,000-150,000	80,000-100,000 100,000-150,000
Yield Point, lbs./sq. in.	35,000-55,000 50,000-125,000	35,000-55,000 50,000-125,000
Elongation in 2 inches	60-50% 50-15%	50-40% 50-10%
Reduction of Area	75-60% (Bars)	65-55% (Bars)
Impact Strength, Izod Value, ft. lbs.	120-70	100
Ductility, Olsen, inches Annealed (Erickson, mms.)	0.40-0.50 10-14	0.40-0.50 12
Creep Strength, At 1000° F. Life of 10,000 hrs. with 1% Elongation, lbs. per sq. in.	22,500 17,000 11,000 7,100	18,500 14,000 9,500 5,400
Strength at Elevated Temps., Short Time Tests, lbs./sq. in.	48,000 28,000 18,000	40,000 23,500 17,500
HEAT TREATMENT		
Full Anneal	Cool rapidly from 1850-2050° F.	Cool rapidly from 1850-2050° F.
Process Anneal	Same as full	Same as full
Hardening—Quench from	Non-hardening	Non-hardening
Tempering	Non-hardening	Non-hardening
Initial Forging { Start (Finish	2200° F. Over 1700° F.	2200° F. Over 1800° F.
HEAT RESISTANCE		
Scaling Temperature { Continuous Service Temperature { Intermittent Service	1650° F. 1500° F.	1600° F. 1450° F.
WELDING PROPERTIES		
MACHINING PROPERTIES , Compared to Bessemer Screw Stock No. B1112	About 45%	About 45%
DRAWING OR STAMPING	Good.	Good.

*These mechanical property values apply to cold rolled sheet or strip in Type 430 and all Type 300 series except Type 303. In Type 303 and all of Type 400 series with the exception of Type 430, these representative mechanical property values apply to annealed and cold drawn one inch diameter bar stock.

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TECHNICAL PROPERTIES OF POPULAR GRADES OF STAINLESS STEELS (Continued)

Grade—Type Number	Type 410	Type 416
PHYSICAL PROPERTIES		
Density, lb./cu. in.	Specify .10 min. Carb. for hardenable grade 0.28	0.28
Mod. of Elasticity in Tension $\times 10^6$ p.s.i.	29.0	29.0
Structure	Martensitic	Martensitic
Specific Heat, B.t.u./° F./lb. 32-212° F.	0.11	0.11
Thermal Conductivity, (212° F. B.t.u./sq. ft./hr.) ² F./ft. (932° F.)	14.4 16.6	14.4 16.6
Mean Coefficient of Thermal Expansion per ° F. $\times 10^{-6}$	5.5 32-600° F. 32-1000° F. 32-1200° F.	5.5 5.6 6.4 6.5
Melting Point Range	2700-2790° F.	2700-2790° F.
ELECTRICAL PROPERTIES		
Magnetic Permeability, Annealed Elec. Resistivity, microhms-cm, 70° F.	Ferro-magnetic 57.0	Ferro-magnetic 57.0
MECHANICAL PROPERTIES		
Brinell { Annealed Hardness { Heat Treated (Bars) { Cold Drawn	135-165 415-180 205	138-160 415-200 205
Rockwell { Annealed Hardness { Heat Treated (Sheet or Strip) { Cold Rolled	75-85 R _B 30-40 R _C	80-90 R _B 10-30 R _C
Ultimate Tensile Strength, { Annealed lbs./sq. in. { Heat Treated { Cold Worked*	65,000-85,000 95,000-200,000 100,000	70,000-80,000 90,000-200,000 100,000
Yield Point, { Annealed lbs./sq. in. { Heat Treated { Cold Worked*	35,000-45,000 60,000-150,000 85,000	40,000-50,000 70,000-150,000 85,000
Elongation in 2 inches { Annealed { Heat Treated { Cold Worked*	30-20% 30-10% 17%	30-20% 22-12% 13%
Reduction of area { Annealed { Heat Treated { Cold Worked*	65-60% 60-25% 60%	65-60% 55-40% 50%
Impact Strength, Izod Value, Ft. lbs. { Annealed { Heat Treated	110-70 100-20	95-70 60-12
Ductility { Olsen, inches Annealed { Erickson, mms.	275-.350 6.75-7.50	.....
Creep Strength, Life of 10,000 hrs. with 1% Elongation, lbs. per sq. in.	At 1000° F. At 1100° F. At 1200° F. At 1300° F.	13,000 5,000 2,300 1,500
Strength at Elevated Temps., Short Time Tests, lbs./sq. in.	1300° F. 1500° F. 1700° F.	15,000 9,000 8,500
HEAT TREATMENT	Slow Cool from 1550° F. to 1100° F.	Slow Cool from 1550° F. to 1100° F.
Full Anneal		
Process Anneal	Air Cool from 1300-1400° F.	Air Cool from 1250-1350° F.
Hardening—Quench from	1750-1825° F.	1750-1825° F.
Tempering	400-1300° F.	400-1300° F.
Initial Forging { Start { Finish	2150° F. 1500° F.	2200° F. 1500° F.†
HEAT RESISTANCE		
Scaling { Continuous Service Temperature { Intermittent Service	1250° F. 1400° F.	1250° F. 1400° F.
WELDING PROPERTIES	Fair. Brittle welds. Can be annealed	Poor. Brittle Welds. Likely to crack
MACHINING PROPERTIES , Compared to Bessemer Screw Stock No. B1112.	About 54%	About 90%
DRAWING OR STAMPING	Fairly good.	Fair.

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†This analysis is designed for machining applications and is not recommended for forging operations requiring severe deformation.

TECHNICAL PROPERTIES OF POPULAR GRADES OF STAINLESS STEELS (Continued)

Grade—Type Number	Type 420	Type 430
PHYSICAL PROPERTIES		
Density, lb./cu. in.	0.28	0.28
Mod. of Elasticity in Tension $\times 10^6$ p.s.i.	29.0	29.0
Structure	Martensitic	Ferritic
Specific Heat, B.t.u./° F./lb. 32-212° F.	0.11	0.11
Thermal Conductivity, {212° F. B.t.u./sq. ft./hr./° F./ft. {932° F.	14.4	15.1 15.2
Mean Coefficient of Thermal Expansion per ° F. $\times 10^{-6}$	5.7 32-60° F. 32-1000° F. 32-1200° F.	6.0 6.5 6.8
Melting Point Range	2650-2750° F.	2600-2750° F.
ELECTRICAL PROPERTIES		
Magnetic Permeability, Annealed Elec. Resistivity, microhms-cm. 70° F.	Ferro-magnetic 55.0	Ferro-magnetic 60.0
MECHANICAL PROPERTIES		
Brinell {Annealed Hardness {Heat Treated (Bars) {Cold Drawn	160-190 520-225 215	140-160 185
Rockwell {Annealed Hardness {Heat Treated (Sheet or Strip) {Cold Rolled	23 Rc	80-90 R _B 90-105 R _B
Ultimate Tensile Strength, lbs./sq. in.	95,000 120,000-220,000 105,000	70,000-90,000 90,000-130,000
Yield Point, lbs./sq. in.	50,000 85,000-210,000 85,000	40,000-55,000 65,000-130,000
Elongation in 2 inches {Annealed {Heat Treated {Cold Worked*	25% 20-7% 17%	30-20% 20-2%
Reduction of Area {Annealed {Heat Treated {Cold Worked*	55% 60-25% 50%	55-40%
Impact Strength, Izod Value, Ft. lbs. {Annealed {Heat Treated	80-70 60-10	50-5
Ductility, Olsen, inches {Annealed {Erickson, mms.	.....	.275-.350 6.75-8.50
Creep Strength, At 1000° F. Life of 10,000 hrs. with 1% Elongation, lbs. per sq. in.	..... ..... ..... .....	8,500 5,000 2,000 1,300
Strength at Elevated Temps., Short Time Tests, lbs./sq. in.	26,500 13,500 9,000	15,000 8,000 5,000
HEAT TREATMENT		
Full Anneal	Slow Cool from 1550-1650° F.	Air Cool from 1400-1500° F.
Process Anneal	Air Cool from 1250-1350° F.	Same as full
Hardening—Quench from	1800-1900° F.	Non-hardening
Tempering	300-700° F.	Non-hardening
Initial Forging {Start Finish	2000-2100° F. (Retard cooling)	1950° F. 1400° F.
HEAT RESISTANCE		
Scaling {Continuous Service Temperature {Intermittent Service	.....	1500° F. 1600° F.
WELDING PROPERTIES		
	Fair, Preheat 400-500° F. Anneal 1300° F. after welding.	Fair, Brittle welds. Slight response to annealing.
MACHINING PROPERTIES, Compared to Bessemer Screw Stock No. B1112		
DRAWING OR STAMPING	About 54%	About 54%
	Fair	Fairly good.

*These mechanical property values apply to cold rolled sheet or strip in Type 430 and all Type 300 series except Type 303. In Type 303 and all of Type 400 series with the exception of Type 430, these representative mechanical property values apply to annealed and cold drawn one inch diameter bar stock.

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TECHNICAL PROPERTIES OF POPULAR GRADES OF STAINLESS STEELS (Continued)

Grade—Type Number	Type 440-C	Type 446
PHYSICAL PROPERTIES		
Density, lb./cu. in.	0.28	0.27
Mod. of Elasticity in Tension $\times 10^6$ p.s.i.	29.0	29.0
Structure	Martensitic	Ferritic
Specific Heat, B.t.u./° F./lb. 32-212° F.	0.11	0.12
Thermal Conductivity, (212° F. B.t.u./sq. ft./hr.) / (932° F.)	14.0	12.1 14.1
Mean Coefficient of Thermal Expansion per ° F. $\times 10^{-6}$	5.6 32-600° F. 32-1000° F. 32-1200° F.	5.8 6.0 6.2 6.4
Melting Point Range	2500-2700° F.	2600-2750° F.
ELECTRICAL PROPERTIES		
Magnetic Permeability, Annealed Elec. Resistivity, microhms-cm, 70° F.	Ferro-magnetic 60.0	Ferro-magnetic 67.0
MECHANICAL PROPERTIES		
Brinell (Annealed)	210-250	140-185
Hardness (Heat Treated (Bars))	600-275	.....
(Cold Drawn)	260	185
Rockwell (Annealed)	.....	78-90 R _B
Hardness (Heat Treated (Sheet or Strip))	.....	.....
(Cold Rolled)	.....	.....
Ultimate Tensile Strength, (Annealed lbs./sq. in.)	110,000 130,000-265,000 125,000	75,000-95,000 85,000
Yield Point, (Annealed lbs./sq. in.)	65,000 110,000-250,000 100,000	45,000-60,000 70,000
Elongation in 2 inches (Annealed Heat Treated (Cold Worked*))	10-15% 12-22% 7%	30-20% 20% 20%
Reduction of Area (Annealed Heat Treated (Cold Worked*))	30% 20-22% 20%	50-40% 45% 45%
Impact Strength, Izod Value, ft. lbs. (Heat Treated)	20-5 8-3	8-2
Ductility (Olsen, inches Annealed)	.....	.250-.300 6-5
Erickson, mms.)	.....	.....
Creep Strength, Life of 10,000 hrs. with 1% Elongation, lbs. per sq. in.	At 1000° F. At 1100° F. At 1200° F. At 1300° F.	..... ..... ..... .....
Strength at Elevated Temps., Short Time Tests, lbs./sq. in.	1300° F. 1500° F. 1700° F.	30,500 17,000 16,500
		18,000 9,000 5,000
HEAT TREATMENT		
Full Anneal	Slow Cool from 1550-1650° F.	Air Cool from 1500-1600° F.
Process Anneal	Air Cool from 1250-1350° F.	Same as full
Hardening—Quench from Tempering	1850-1950° F. 300-800° F.	Non-hardening Non-hardening
Initial Forging (Start (Finish)	1900-2100° F. (Retard cooling)	1950° F. 1400° F.
HEAT RESISTANCE		
Scaling Temperature (Continuous Service Intermittent Service)	.....	1900° F. 2000° F.
WELDING PROPERTIES	Not recommended	Fair. Brittle welds. Slight response to annealing.
MACHINING PROPERTIES , Compared to Bessemer Screw Stock No. B1112	About 30%	About 40%
DRAWING OR STAMPING	Not recommended	Fair

*These mechanical property values apply to cold rolled sheet or strip in Type 430 and all Type 300 series except Type 303. In Type 303 and all of Type 400 series with the exception of Type 430, these representative mechanical property values apply to annealed and cold drawn one inch diameter bar stock.

DATA

TECHNICAL PROPERTIES OF ARMCO 17-4 PH BAR AND WIRE

CHEMICAL COMPOSITION	Metal	Content
Carbon	0.07%	Max.
Manganese	1.00%	Max.
Phosphorus	0.04%	Max.
Sulfur	0.03%	Max.
Silicon	1.00%	Max.
Chromium	15.50-17.50%	
Nickel	3.00-5.00%	
Copper	3.00-5.00%	
Columbium plus Tantalum	0.25-0.45%	

MECHANICAL PROPERTIES	Cond. A	Cond. H875	Cond. H1000	Cond. H1100	Cond. H1200
	Annealed	Hardened	Hardened	Hardened	Hardened
1900 F.	1900 F.	875 F.	1000 F.	1100 F.	1200 F.
½ Hr. oil quench	1 Hr. air-cooled	4 Hrs. air-cooled	4 Hrs. air-cooled	4 Hrs. air-cooled	4 Hrs. air-cooled

Room Temperature

Armco 17-4PH can be heat treated at different temperatures to develop various properties. Fully hardened 17-4PH will have a minimum tensile strength of 180,000 psi and minimum yield strength of 165,000 psi. Typical properties for various conditions are shown below:

Ultimate Strength, psi					
Tension	135-165,000	180-210,000	170,000	150,000	145,000
Torsion	.....	160-180,000	.....	.....	.....
0.2% Yield Strength, psi					
Tension	95-125,000	165-200,000	160,000	140,000	95,000
Compression	95-125,000	165-200,000	.....	.....	.....
Endurance strength, psi					
10 million cycles	.....	90,000	87,500	82,000	.....
100 million cycles	.....	80,000	.....	.....	.....
Elongation in 2", %	6-15	8-17	14	17	17
Reduction of Area, %	30-60	30-60	55	58	.....
Izod Impact, foot lbs.	.....	10-40	30	40	50
Hardness					
Rockwell	.....	C40-45	C37	C35	C30
Brinell	.....	375-444	375	.....	.....
Modulus of Elasticity					
Tension	.....	28,500,000	.....	.....	.....
Torsion	.....	10,500,000	.....	.....	.....

PHYSICAL PROPERTIES	Condition A (Magnetic)	Condition H875 (Magnetic)
Density, grams per cu. cm. lbs. per cu. inch	7.78 .280	7.80 .282
Electrical Resistivity, microhm-cm.	98	77
Magnetic Permeability		
at 100 oersteds	74	100
at 200 oersteds	48	60
Maximum	95	151
Mean Coefficient of Thermal Expansion		
10 ⁶ inches per inch per degree F.		
70-200 F.	6	6
70-400 F.	6	6.1
70-600 F.	6.2	6.3
70-800 F.	6.3	6.5
Thermal Conductivity		
Btu per hr. per sq. ft. per inch per °F.		
at 300 F.		124
500 F.		135
860 F.		156
900 F.		157

Shear strength - Approximately 70% of Ultimate strength.

Note: For additional information on 17-4 PH Bar and Wire, call our nearest warehouse or sales office.

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TECHNICAL PROPERTIES OF ARMCO 17-7 PH BAR AND WIRE

CHEMICAL COMPOSITION	Metal	Content	
	Carbon	0.09% Max.	
	Manganese	1.00% Max.	
	Phosphorus	0.04% Max.	
	Sulfur	0.03% Max.	
	Silicon	1.00% Max.	
	Chromium	16.00-18.00%	
	Nickel	6.50-7.75%	
	Aluminum	.75-1.50%	
MECHANICAL PROPERTIES	Bar and Wire		Wire
	Cond. A	Cond. T	Cond. TH 1050
Tensile Strength, psi			Bar
Typical	130,000	145,000	125,000
Minimum	150,000*	125,000	170,000
0.2% Yield Strength, psi			
Typical	40,000	100,000	155,000
Minimum	55,000	75,000	140,000
Elongation in 2", %			
Typical	30.0	9.0	12.0
Minimum	20.0	4.0	7.0
Endurance Strength, % of Tensile Strength			
Machined and Polished Surfaces			
10 ⁷ cycles	....	....	44%
10 ⁸ cycles	....	....	41%
37%			
PHYSICAL PROPERTIES			
Density			
Grams per cu. cm. lbs. per cu. in.	7.81 0.282	....	7.65 0.276
Electrical Resistivity	81.0	....	85.0
Microhm per cm.			83.8
Magnetic Permeability			
100 oersteds	....	....	90-110
200 oersteds	....	....	53-63
Maximum	....	....	175-260
Mean Coefficient Thermal Expansion $\times 10^6$ in. per in. per degree F.			
70-200 F.	8.5	....	5.5
70-400 F.	9.0	....	5.8
70-600 F.	9.5	....	5.9
70-800 F.	9.6	....	6.1
† Thermal Conductivity			
Btu per hr. per sq. ft. per in., per degree F.			
at 300 F.	....	....	117
500 F.	....	....	128
850 F.	....	....	146
900 F.	....	....	146
			114
			127
			150
			151

* Maximum

Poisson's Ratio .27-.28

† Results of Single Test

Note: For additional information on 17-7 PH Bar and Wire, call our nearest warehouse or sales office.

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TECHNICAL PROPERTIES OF ARMCO 17-7 PH SHEET, STRIP AND PLATE

CHEMICAL COMPOSITION	Metal		Content			
	Carbon	Manganese	0.09% Max.	1.00% Max.	0.04% Max.	0.03% Max.
	Phosphorus	Sulfur	0.04% Max.	0.03% Max.	1.00% Max.	1.00% Max.
	Silicon	Chromium	16.00-18.00%	16.00-18.00%	6.50-7.75%	6.50-7.75%
	Nickel	Aluminum	.75-1.50%	.75-1.50%		
MECHANICAL PROPERTIES	Cond. A	Cond. T	Cond. TH 950	Cond. TH 1050	Cond. C	Cond. CH 900
	Tensile Strength, psi Typical Minimum	130,000 150,000*	145,000 125,000	215,000 185,000	200,000 180,000	215,000 200,000	250,000 240,000
0.2% Yield Strength, psi Typical Minimum	40,000 55,000*	100,000 75,000	200,000 165,000	185,000 150,000	185,000 175,000	240,000 230,000
Elongation in 2", % Sheet and Strip Typical Minimum	30.0 20.0	9.0 4.0	8.0 6.0	9.0 6.0	2.0 1.0	1.0 1.0
Plate Typical Minimum	30.0 20.0	9.0 4.0	6.0 3.0	9.0 6.0	† †	† †
Rockwell Hardness, Typical Endurance Limit, Typical % of Tensile Strength Heat treated surface Ground surface, 120 grit Pickled surface Vapor blasted surface	B85	C31 40 29 40	C45 40 29 40	C43 40 29 40	C43	C49 31† 31† 31†
Compression 0.2% Yield Strength, % of Tensile Yield Strength Long. Trans.	..... ..... .....	..... 110 110	..... 110 110	..... 80 115	..... 93 108	
PHYSICAL PROPERTIES						
Density Grams per cu. cm. lbs. per cu. cm.	7.81 0.282	.....	7.65 0.276	7.65 0.276	.....	7.67 0.277
Electrical Resistivity Microhm per cm.	81.0	.....	87.0	85.0	.....	83.8
Magnetic Permeability 100 oersteds 200 oersteds Maximum	..... ..... .....	..... 50 130-165	85-100 50 175-260	90-110 53.63 .....	..... ..... .....	70 43.5 125
Mean Coefficient Thermal Expansion X 10 ⁶ in. per in. per degree F.	..... 70-200 F. 70-400 F. 70-600 F. 70-800 F.	8.5 9.0 9.5 9.6	..... 5.6 6.0 6.1 6.2	..... 5.5 5.8 5.9 6.1	..... ..... ..... .....	6.1 6.2 6.4 6.6
§ Thermal Conductivity Btu per hr. per sq. ft. per in. per degree F. at 300 F. 500 F. 850 F. 900 F.	..... ..... ..... .....	..... 117 128 146 146	..... ..... ..... .....	..... ..... ..... .....	114 127 150 151	

*Maximum †Fatigue Strength at 10⁷ cycles Poisson's Ratio .27-.28

†Not Produced §Results of Single Test

Note: For additional information on 17-7 PH Sheet, Strip and Plate,
call our nearest warehouse or sales office.

Technical information on 17-14 cu-mo furnished on request.

Technical information on 17-10 P (precipitation-hardening grade)
furnished on request.

ANA

MONEL-NICKEL

GENERAL

LAHOMA

DATA

CUTTING RATES FOR STAINLESS STEELS

Description	Type Numbers					
	403*	416*	420 420F†	430	430F	414* 431
Brinell Hardness Ranges on which the following rates are based.	180-240	180-240	180-230	170-230	170-230	230-280

	Cutting Rates in Surface Feet Per Minute					
	Automatic Screw Machine Heavy Duty Single or Multiple Spindle	Turret Lathe	Milling Reaming	Threading	Tapping	Drill Press
Automatic Screw Machine (Swiss type) Based on Cast Alloy or Carbide Tooling	90-100 80-100	120-150 110-130	80-100 60-80	90-100 80-100	120-150 110-130	80-100 70-90
Turret Lathe Based on Tungsten or Moly High-Speed Tooling. Rates may be increased 15-30% with High-Cobalt or Cast Alloys.	80-100	100-130	60-80	80-100	110-130	70-90
Automatic Screw Machine (Swiss type) Based on Cast Alloy or Carbide Tooling	110-140	120-150	90-120	110-140	120-150	100-140
Milling Reaming Smooth finish at .003"/.0075" Feed Work Sizing at .003"/.0075" Feed Based on Tungsten or Moly High-Speed Tooling. Greatly increased rates obtainable with Carbide tooling.	40-60 15-40 40-120	50-80 15-40 40-120	30-50 15-40 40-120	40-60 15-40 40-120	50-80 15-40 40-120	40-60 15-40 40-120
Threading	10-25	10-25	10-25	10-25	10-25	10-25
Tapping	10-25	10-25	10-25	10-25	10-25	10-25
Drill Press Based on Tungsten or Moly High-Speed Tooling.	40-80	60-90	30-50	40-80	60-90	40-60
Single Point Turning Carbide Tooling Roughing Finishing	150-200 200-400	150-200 200-400	100-150 150-250	150-200 200-400	150-200 200-400	140-180 150-350
High Cobalt or Cast Alloy Tooling Roughing Finishing	100-130 100-150	100-150 150-200	80-100 100-150	100-130 100-150	100-150 150-200	90-120 90-140
Tungsten or Moly High-Speed Alloy Tooling Roughing Finishing	80-100 80-130	80-100 100-150	60-80 80-120	80-100 80-130	80-100 100-150	60-80 80-100

*Harder Stock in the Brinell Range of 260-320 may be machined by reducing these speeds approximately 20%.

†When using automatic screw machine equipment, the free machining type allows an increase of about 10% over the cutting rates shown.

For additional information on machining Stainless Steel, ask for the following literature:

"Machining of Armco Stainless Steels"; "Where and How to use Carbides in Machining Stainless Steel"; "Machining Capacities for Machining Armco Stainless Steel".

DATA

TIDE

Type Numbers

440A		301		309-309S	321	347F	17-4PH	17-7PH
440B	446	302		310-310S	347			
440C		304		316-316L				
440F†		304L						
200-265	170-230	150-250	150-240	150-240	150-240	150-240	300-360	150-240

Cutting Rates in Surface Feet Per Minute

60-80 50-70	80-100 60-80	70-90 60-80	100-130 90-120	60-80 60-80	70-90 60-80	90-110 80-100	60-80 50-70	60-80 50-70
50-70	60-80	60-80	90-120	60-80	60-80	80-100	50-70	50-70
60-100	100-140	80-120	110-130	80-120	80-120	100-120	80-120	80-120
30-50	40-60	40-60	40-60	30-50	40-60	40-60	40-60	40-60
15-40	15-40	15-40	15-40	15-40	15-40	15-40	15-40	15-40
40-120	40-120	40-80	40-120	40-80	40-80	40-80	40-80	40-80
10-25 10-25 30-50	10-25 10-25 40-60	10-25 10-25 30-50	10-25 10-25 50-80	10-25 10-25 30-50	10-25 10-25 30-50	10-25 10-25 30-50	10-25 10-25 40-60	10-25 10-25 40-60
100-150 150-200	140-180 150-350	130-180 150-300	150-250 200-400	130-180 150-300	130-180 150-300	150-250 200-400	130-180 150-300	130-180 150-300
60-80 80-100	100-130 100-150	100-130 100-150	100-150	100-130 100-150	100-130 100-150	100-140 140-190	100-130 100-150	100-130 100-150
40-60 60-80	60-90 90-120	60-90 100-120	70-90 100-140	60-90 100-120	60-90 100-120	60-90 100-130	60-90 100-120	60-90 100-120

MONEL-NICKEL

GENERAL

AHOMA

TUBING - CARBON STEELS

A.I.S.I. 1015

	Yield Point	Ultimate Strength	Elongation % in 2 inches	Equivalent Rockwell	Equivalent Brinell
HOT ROLLED	33,000	55,000	40	B-64	107
NORMALIZED	35,000	50,000	40	B-57	97
RETORT ANNEALED	28,000	48,000	45	...	...
SOFT ANNEALED	30,000	48,000	40	...	...
MEDIUM ANNEALED	40,000	65,000	30	B-73	128
FINISH ANNEALED	55,000	75,000	20	B-81	149
HARD DRAWN	67,000	80,000	15	B-84	159
C. .10-.20	MN. .30-.60	P. .045 max.		S. .055 max.	

The regular grade of mechanical tubing carried in stock is of A.I.S.I. 1015 analysis. It is recommended for general use. Its carburizing qualities are good. The general machining qualities are good, but, for special requirements, the tubing can be treated to develop improved machinability.

INTERNATIONAL NICKEL COMPANY ALLOYS

Inco alloys and the special products of the International Nickel Company are a group of rustproof, corrosion resisting metals that are stronger than structural carbon steel and readily fabricated by all the usual methods, including hot and cold forming, machining, welding and soldering.

Because they are rustproof and resistant to many corrosives, these metals are used in a wide variety of chemical equipment to protect the purity of the product, to obtain long life and to minimize maintenance expense. In mechanical equipment they are used to obtain more dependable operation and to eliminate troubles resulting from rust and corrosion, particularly in parts that must have good strength, stiffness and resistance to wear. In appearance applications they are used to obtain durability and attractiveness. Since their mechanical strength is not much affected by extremes in temperatures, they are used for such purposes as quick freezing equipment and for high pressure steam valves.

Continued on next page

DATA

INTERNATIONAL NICKEL COMPANY ALLOYS (Continued)

Monel, Nickel and other products in the hot rolled form are stronger and much tougher than the hot rolled structural carbon steel used in the construction of buildings and bridges. The strength and hardness of all our mill products may be increased by cold working, but Monel, Nickel and Inconel are not susceptible to thermal hardening. However, the special products "K" Monel, Duranickel, and Permanickel, can be hardened by heat treatment, the properties obtained comparing favorably with heat treated alloy steels. The special alloy "S" Monel can also be heat treated, hardnesses being obtained that are comparable to low carbon white iron used in pulverizing equipment for high abrasion resistance.

Monel and Nickel are stronger and tougher than other non-ferrous metals commonly used to avoid rust and for corrosion-resisting purposes. Since they are not only stronger, but much more rigid than copper, aluminum and such materials, they are better adapted to structural applications. Since elevated temperature has less effect on their strength and stiffness, they offer advantages in steam power equipment and other apparatus operated at temperatures above normal. For bearing purposes, "S" Monel has excellent resistance to galling and has high compressive strength.

You who have problems in choosing the best alloy to use under given conditions may obtain assistance by calling our nearest warehouse or sales office. This help may come direct from our representative, through technical literature, or, if necessary, from a member of the International Nickel Company's technical staff. The services of Inco's Development and Research Division are available free of charge. This division has first-hand experience, and has developed a vast library of field data.

NA

MONEL-NICKEL

GENERAL

AHOMA

DATA

MONEL

New Designation:

MONEL alloy 400

Nominal Composition in %

NICKEL	66.00	SILICON	0.15
COPPER	31.50	CARBON	0.12
IRON	1.35	SULPHUR	0.005
MANGANESE	.90		

Monel possesses the unusual combination of steel-like strength and toughness with complete immunity to rust and high resistance to a long list of corrosives under varying conditions, including salt, lye, sulfuric acid and others commonly encountered.

Strong, corrosion-resistant Monel assures longer equipment life. Its corrosion resistance protects the purity, taste and color of commodities such as salt, food stuffs, pharmaceuticals and various chemical products. It has many mechanical applications such as high speed propeller shafting. It has become almost a standard material for salt water applications under most conditions.

Monel is widely used in petroleum production and refining equipment, in such forms as condenser tubes, bubble caps, tank linings, piping, valves, polish rods and liners, pump rods, work boards in bottom hole petroleum field equipment, etc.

In the rapidly expanding field of off-shore oil drilling, Monel has proved its worth as a sheathing material to protect the steel piling from salt water corrosion at the tide level zone. This application has been extended to include the structures housing our country's off-shore radar warning system.



An off-shore oil drilling rig. Monel sheathing protects its steel piling from salt water corrosion at the tide level zone.

DATA

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"K" MONEL

New Designation:

MONEL alloy K-500

**Extra Strength and Hardness
(through heat treatment)**

Non-Magnetic

Nominal Composition in %

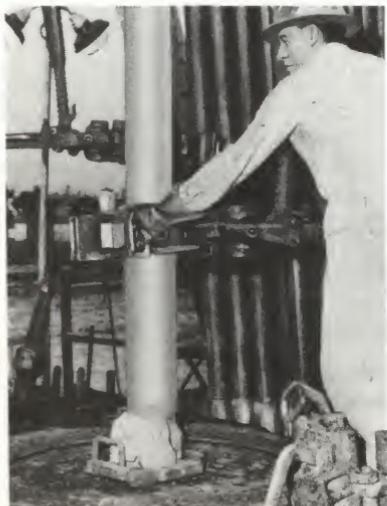
NICKEL	65.30	MANGANESE	0.60
COPPER	29.50	CARBON	0.15
ALUMINUM	2.80	SILICON	0.15
IRON	1.00	SULPHUR	0.005
TITANIUM	0.50		

"K" Monel possesses the rustproof, corrosion-resistant characteristics of Monel and through heat treatment develops strength and hardness comparable to the alloy steels used in high strength airplane engine crankshafts. Prior to heat treatment, it may be formed and welded with the same ease as Monel.

Because of its high strength and corrosion-resistance, it is used as shafting for pumps handling salt water, acid treated petroleum and other corrosive liquids. Its hardness and wear resistance suit it for scraper blades, seats and discs of valves, and wearing sleeves.

Generally, in the oil production field only two corrosives are encountered, salt water and hydrogen sulphide. "K" Monel has been found very useful in such media. Because of its non-magnetic properties and corrosion resistance, "K" Monel is an excellent material for drill collars in directional drilling equipment where sensitive instruments are involved. Important applications are; seats in ball and cage valves (on working barrel of bottom hole equipment), sucker rods, and gas lift valves. In oil refineries "K" Monel stud bolts have found extensive use in HF Alkylation systems.

Large sluice-gate stems of hammer forged and heat treated "K" Monel, up to 8½ inches diameter x 20 feet, are used in several of the country's largest dams, because it is possible to obtain higher strength than in other non-corrosive metals.



A "K" Monel drill collar being lowered into hole. This drill collar is about 20 feet long.

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GENERAL

LAHOMA

DATA**"R" MONEL**

New Designation:
MONEL alloy R-405

For High Speed Machining

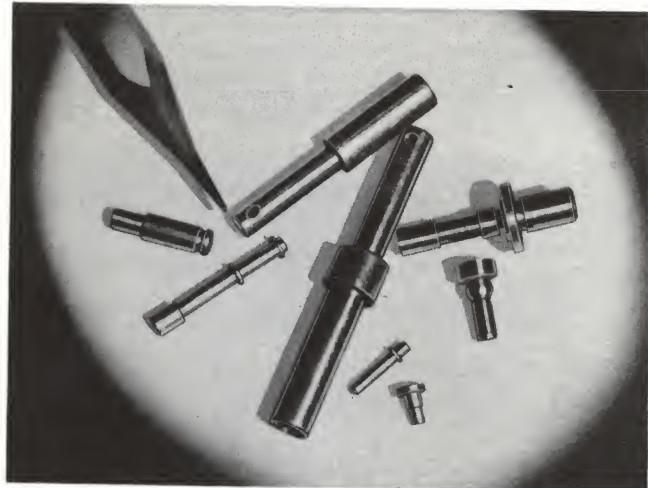
Nominal Composition in %

NICKEL	65.95	SILICON	0.15
COPPER	31.50	CARBON	0.18
IRON	1.35	SULPHUR	0.050
MANGANESE	0.90		

"R" Monel has the free-cutting qualities required for high-speed automatic machine work and at the same time provides the corrosion resistance and immunity to rust inherent in Monel.

Its strength is equal to the best available steel screw stock and it may be readily fabricated by cold-forming operations such as cold-heading and bending. Being red short, it is not recommended for hot-upsetting or other hot-forming operations.

"R" Monel is used for parts of regulators, gas lift valves, and other applications requiring a high degree of corrosion resistance and immunity to rusting.



Precision machine parts made with "R" Monel. It is possible to maintain extremely close tolerances with "R" Monel.

DATA

"KR" MONEL

New Designation:

MONEL alloy 501

For Improved Machinability

Nominal Composition in %

Same as "K" Monel, except
carbon content of 0.23
and nickel 65.20

"KR" Monel is an age-hardenable alloy similar to "K" Monel, but with better machinability. It has essentially the same chemical composition, corrosion resistance, mechanical and physical properties as "K" Monel; and is recommended for parts requiring intricate machining.

"KR" Monel that has not been age-hardened (i.e., "as rolled", "as drawn", or quenched) can be machined, using the tools, tool design and cutting lubricants normally used for "K" Monel, but at the machining speeds used for Monel. For automatic machining of "KR" Monel, cutting speeds of 60 to 80 feet per minute may be used with the corresponding feeds normally used for machining-quality "R" Monel.

"A" NICKEL

New Designation:

NICKEL 200

For Processing Pure Products

Nominal Composition of "A" Nickel

NICKEL	99.45	SILICON	0.05
COPPER	0.05	CARBON	0.06
IRON	0.15	SULPHUR	0.005
MANGANESE	0.25		

NOTE: Nominal Composition of Low Carbon Nickel is same as "A" Nickel except carbon content of .01, Manganese .20 and Nickel 99.55.

Nickel is a pure metal with high strength and corrosion resistance. It has many applications in the food and chemical industries where the protection of purity, color, odor and flavor are essential.

The outstanding resistance of nickel to molten concentrated caustic soda (lye) accounts for its extensive use in both the production and consumption of pure caustic soda. Nickel-clad collandrias for the sugar industry represent a new wide use. Nickel also has proved valuable in chlorinated hydrocarbon processing equipment.

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GENERAL

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DATA

DURANICKEL

New Designation:

DURANICKEL alloy 301Excellent Spring Properties
in a Rustproof Metal

Nominal Composition in %

NICKEL	93.90	ALUMINUM	4.50
COPPER	0.05	SILICON	0.55
MANGANESE	0.25	CARBON	0.15
IRON	0.15	SULPHUR	0.005
TITANIUM	0.45		

This alloy, in addition to having the corrosion resistance of nickel, may be hardened through heat treatment; and will develop strength comparable to the oil tempered steel commonly used for springs.

Duranickel, like "K" Monel, may be hardened after fabrication. In the unhardened condition, it may be bent, drawn, machined and stamped almost as easily as nickel.

In oil refineries, Duranickel stud bolts are used extensively in HF Alkylation systems.

Duranickel springs made from both wire and strip have good resistance to fatigue, and at room temperatures are performing well under many corrosive conditions. Some applications are laundry clips, jewelry parts, optical frames, springs in sunlamps and spark plugs, and shaker springs on fourdriniers in paper mills. Duranickel springs in electric toasters operate effectively up to 600° F.

Its use as instrument parts include diaphragms, bellows, flapper valve discs, snap switch blades, and hands and numbers on watches used by the blind.

In the sports field, Duranickel is used for trolling wire, fish hooks and other parts of fishing tackle.

Duranickel "R" is a machining grade of Duranickel. Its chemical composition, mechanical properties, and corrosion characteristics are essentially the same as those of Duranickel.



Springs of Duranickel are corrosion-resistant as commercially pure nickel, and as stiff, hard, and strong as heat treated alloy steel springs.

DATA

PERMANICKEL

New Designation:

PERMANICKEL alloy 300

Nominal Composition in %

NICKEL	98.00	SILICON	0.10
COPPER	0.05	TITANIUM	0.40
MANGANESE	0.10	MAGNESIUM	0.30
IRON	0.10	CARBON	0.25
SULPHUR	0.005		

Permanickel is an age-hardenable alloy having the same mechanical properties and resistance to corrosion as Duranickel, but different physical constants. It is preferred to Duranickel in a few services, such as springs requiring high electrical conductivity, and magnetoresistive units which are operated under stress conditions for which the fatigue strength of nickel is inadequate.

INCONEL

New Designation:

INCONEL alloy 600

Heat Resistant — Corrosion Resistant

Nominal Composition in %

NICKEL	76.40	MANGANESE	0.20
CHROMIUM	15.85	SILICON	0.20
COPPER	0.10	CARBON	0.04
IRON	7.20	SULPHUR	0.007

Inconel combines the corrosion resistance, strength and great toughness of nickel, the basic metal, with the extra resistance to heat and oxidation contributed by chromium.

Inconel's ability to withstand repeated heating and cooling in the range 0°-1600° F., without becoming embrittled, has caused its wide-spread adoption for exhaust manifolds for airplane engines and for sheathing electric heating elements; at temperatures up to 2000° F., it is used for various types of furnace and heat treatment equipment. Thus its chief use is in the high temperature field.

Because of its corrosion resistance, the chemical and allied industries use Inconel equipment for processing fatty acids, pharmaceuticals and organic materials, such as dyestuffs, pure edible oils, and pectin.

Inconel is particularly suitable for food processing equipment — for handling milk, gin, champagne, orange juice, etc., where freedom from contamination or discoloration are main requisites and resistance to corrosive-cooling brines and scouring and sterilizing compounds are important.

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GENERAL

KLAHOMA

DATA**INCONEL "X"****New Designation:****INCONEL alloy X-750****Nominal Composition in %**

NICKEL	72.80	ALUMINUM	0.80
CHROMIUM	15.15	SILICON	0.30
IRON	6.75	MANGANESE	0.70
TITANIUM	2.55	COPPER	0.05
COLUMBIUM	0.85	CARBON	0.04
		SULPHUR	0.007

This is an alloy having a low creep-rate under high stresses at 1200°-1500° F. (after suitable thermal treatment), highly resistant to chemical corrosion and oxidation, and suitable for use as springs up to 1000° F. Above 1500°, its creep strength diminishes and its oxidation resistance falls below that of Inconel.

Typical uses include parts of aircraft gas turbines, or other gas turbines, and heat engines that require high strength and a low plastic flow rate at temperatures up to 1500° F.

Complete information is unavailable to date on the mechanical properties of Inconel "X", and it is suggested that you get in touch with our nearest warehouse or sales office for additional technical data.

INCOLOY**New Designation:****INCOLOY alloy 800****Heat Resistant — Corrosion Resistant****Nominal Composition in %**

NICKEL	32.50	SILICON	0.35
CHROMIUM	20.50	COPPER	0.30
IRON	45.50	CARBON	0.04
MANGANESE	0.75	SULPHUR	0.007

Incoloy provides a high temperature alloy with good resistance to oxidation, strength at elevated temperatures, and good workability and welding properties.

Because it is a relatively new alloy, Incoloy's corrosion resistance at high temperatures is still under test. In terms of behavior in various high temperature environments, it is anticipated that the alloy, because of its lower nickel content, will be superior to Inconel in its resistance to sulphur attack, "green rot", and molten cyanide salts; comparable to Inconel in resistance to oxidation and in fused neutral salts; and inferior to Inconel in nitriding, halogen gases, and molten caustic.

DATA

NI-O-NEL

New Designation:

NI-O-NEL alloy 825

Acid Corrosion Resistant

Nominal Composition in %

NICKEL	42.50	COPPER	1.80
CHROMIUM	22.50	MANGANESE	0.55
IRON	27.75	SILICON	0.35
MOLYBDENUM	3.10	CARBON	0.03
SULPHUR	0.007	ALUMINUM	0.15
TITANIUM	0.50	COLUMBIUM	0.75

Ni-O-Nel, the newest of the high-nickel Inco alloys, was developed to withstand certain corrosive conditions of unusual severity. It answers a need not filled by any other Inco alloys, in that it has the specific ability to perform well in certain hot acids and oxidizing chemicals as well as in other media.

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It is considerably more resistant to reducing conditions — such as hot sulphuric, sulphurous and phosphoric acid solutions than any of the common stainless steels. It is also a good material to use with nitric acid solutions, nitrates, and cupric, ferric and mercuric salts, except chlorides. In view of the generally useful resistance of the stainless steels in many nitric acid solutions, it is probable that Ni-O-Nel will prove valuable in mixtures of nitric with other acids such as nitric-sulphuric, nitric-phosphoric, and some nitric-hydrofluoric solutions.

It performs well in most organic acids. It shows excellent resistance to boiling concentrated acetic acid, acetic-formic acid mixtures, maleic and phthalic acids and other organic acids which are frequently corrosive to stainless steels.

Ni-O-Nel shows particular adaptability for heat exchanger equipment due to the fact that it not only resists a wide range of chemical corrosives, but also performs well with certain troublesome cooling waters. It has shown considerably better resistance than Type 316 Stainless to pitting attack in sea water, and also to stress corrosion cracking in chloride solutions.

Ni-O-Nel is available in all wrought mill forms. Contact our nearest warehouse or sales office and ask for technical bulletin T-37, "Engineering Properties of NI-O-NEL".

GENERAL

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DATA

INCO ALLOY PHYSICAL CONSTANTS

OLD DESIGNATION	MoneI	"K" MoneI	"S" MoneI	Nickel	Durnickel	Permanickel	Inconel	Inconel "X"	Incoloy
NEW DESIGNATION	MONEL alloy 400	MONEL alloy K-500	MONEL alloy 805	NICKEL 200	DURANICKEL alloy 301	PERMANICKEL alloy 300	INCONEL alloy 600	INCONEL alloy X-750	INCOLY alloy 800
Density (lb. per cu. in.)	0.319	0.306	0.307-0.318	0.321	0.298	0.316	0.307	0.3	0.29
Melting point (° F.)	2370-2460	2400-2460	2360-2350	2615-2635	2550-2620	2540-2600	2450-2600	2550-2600	
Mean specific heat (B.t.u./LB./° F.) 70°-750° F.	0.127	0.127	0.127	0.130A	0.104	.....	0.109B	0.10-0.11	.....
Mean coefficient of thermal expansion (In./In. /° F.) 70°-212° F. 70°-1100° F.	0.0000078 0.0000089	0.0000078 0.0000089	0.0000082C 0.0000087D	0.0000074A	0.0000072	0.0000072	0.0000078E	.0000096	.0000101G
Thermal conductivity (B.t.u./Sq. Ft./Hr./° F./In.)	180A	130B	180A	420A	128/137*	400	104A	85/196H	95A
Electrical Resistivity (Ohms/Mil Ft.)	290(68° F.)	350(32° F.)	380(32° F.)	57(32° F.)	280/260*(32° F.)	100/94.5*	590(32° F.)	750(122° F.)	.....
Electrical Resistivity Temp. Coef. (Per ° F.)	0.0011	0.000106	.....	0.0022-0.0028	.0006	.002	.....	.....	.....
Magnetic Transformation Temp. ° F.	Variable	Below 110°	.....	680	60-120/200*	600/563*	.....	280	.....
Modulus of Elasticity (Million Psi) In Tension In Torsion	26 9.5	26 9.5	21	30 11	30 11	31 11	31 11	31 11	31 11
A—80°-212° F. B—77°-212° F.	C—70°-600° F. D—70°-1000° F.	E—100°-200° F.	F—100°-1500° F.	G—100°-200° F.	H—111°-1472° F.				

*First figure applies to soft condition; the second, to age-hardened condition.
 NOTE: MONEL alloy R-405 physical constants are substantially the same as Monel alloy 400.
 MONEL alloy 501 physical constants are substantially the same as Monel alloy K-500.

DATA

INCO ALLOYS MECHANICAL PROPERTIES

The values listed indicate only the minimum and maximum properties available over the complete range of tempers and sizes for each product. More detailed information is available on request.

Metal and Form	Strength	Yield Strength (0.2% Offset) 1000 Psi	Ductility Elongation Per Cent In 2"	Hardness Brinell 3000 Ks.	Rockwell Range	Toughness Izod Impact Value Ft. Lb.
MONEL ALLOY 400						
Rods, Bars, Forgings	70-125	25-120	50-5	110-250	60B-23C	120-75
Sheet	65-120	25-110	50-2	.....	60B-33B	.....
Strip	70-140	25-130	50-30	110-170	68B-98B	.....
Plate	70-90	28-60	50-3	.....	60B-98B	.....
Tubing	65-130	25-120	50-2	.....	60B-27C	.....
Wire	70-170	25-165	50-2	.....	.....	.....
NICKEL 200						
Rods, Bars, Forgings	55-110	15-100	55-10	90-230	45B-98B	.....
Sheet	55-115	15-105	50-2	.....	70B-90B	.....
Strip	55-130	15-115	50-2	.....	64B-95B	.....
Plate	55-85	15-50	60-35	99-150	45B-80B	.....
Tubing	55-115	15-105	60-10	.....	65B-105B	.....
Wire	50-165	10-150	50-2	.....	.....	.....
INCONEL ALLOY 600						
Rods, Bars, Forgings	80-150	25-125	55-10	120-290	65B-30C	120-70
Sheet	80-150	30-125	55-2	.....	65B-24C	.....
Plate	80-110	30-65	55-30	120-210	65B-95B	.....
Strip	80-170	30-160	55-2	.....	84B-30C	.....
Tubing	80-160	30-140	55-2	.....	88B-34C	.....
Wire	80-185	25-175	55-2	.....	.....	.....

Continued on next page

GENERAL

ANA

LAHOMA

INCO ALLOYS MECHANICAL PROPERTIES (Continued)

Metal and Form	Strength		Ductility		Brinell 3000 Kg.	Rockwell Range	Toughness
	Tensile Strength 1000 Psi	Yield Strength (0.2% Offset) 1000 Psi	Elongation Per Cent in 2"	Izod Impact Value, Ft. Lb.			
MONEL alloy K-500							
Rods, Bars, Forgings	90-180	40-150	45-13	140-330	75B-37C	.....	.....
Sheet and Strip	90-200	40-180	45-3	.....	75B-40C	.....	.....
Tubing	90-210	40-180	45-2	.....	75B-40C	.....	.....
Wire	90-210	40-190	45-2	.....	.....	.....	.....
MONEL alloy 501							
Rods	90-180	40-150	45-13	140-340	75B-37C	.....	.....
MONEL alloy R-405							
Rods	75-115	35-100	45-15	130-240	.....	.....	.....
DURANICKEL alloy 301							
Rods, Bars	90-210	30-175	55-15	135-380	75B-42C	.....	120-25
Strip	90-230	35-60	50-2	.....	90B-46C	.....	.....
Wire	90-240	.....	50-2	.....	.....	.....	.....
INCOLLOY alloy 800							
Rods, Bars, Forgings	75-120	30-105	50-10	120-290	66B-30C	.....	.....
Sheet	75-100	30-55	55-30	.....	88B (Max.)	.....	.....
Strip	75-100	30-50	55-30	.....	84B (Max.)	.....	.....
Plate	30-90	.....	50-25	120-220	.....	.....	.....
Tubing	75-120	30-55	50-30	.....	88B (Max.)	.....	.....
Wire	75-105	25-55	50-25	.....	.....	.....	.....
CLAD STEEL PLATES							
Unless otherwise specified, the steel layer of Clad Steel Plate is low-carbon Flange quality with minimum tensile strength of 55,000 Psi and minimum yield strength of 27,500 Psi. In the composite metal of steel and nickel, Monel or Inconel, the cladding metal contributes additional strength, generally increasing the ultimate tensile strength by from 500-5000 Psi.							

Continued on next page

DATA

INCO ALLOYS MECHANICAL PROPERTIES (Continued)

Metal and Form	Strength		Ductility		Hardness		Toughness Izod Impact Value, Ft. Lb.
	Tensile Strength 1000 Psi	Yield Strength (0.2% Offset) 1000 Psi	Elongation Per Cent in 2"	Brinell 3000 Kg.	Rockwell Range		
Castings							
Monei	65-80	32.5-40	45-25	125-150	.....	.....	80-65
Nickel	55-70	20-30	30-15	100-130	55B-72B	.....	.....
"S" Monei	110-145	80-115	4-1	275-350	.....	.....	9-1
"H" Monei	90-115	60-80	20-10	175-250	.....	.....	45-35
Structural Steel (ASTM. Spec. A7-36)							
Plates, Shapes, Bars	60-70	33 Min.	22 Min.	.....	.....	.....	.....
Phosphor Bronze Spring Wire (SAE Spec. 81)							
.062"-123" Dia.	120 Min.	.....	.....	.....	.....	.....	.....
Brass Forgings (SAE Spec. 88)							
Hot Pressed	45	18	25	.....	.....	.....	.....

DATA

MECHANICAL PROPERTIES O NI-O-NEL alloy 825

The following properties of Ni-o-nel should not be used for specification purposes, but indicate average properties obtained on several forms.

Description	Size	Yield Strength (PSI)	Tensile Strength (PSI)	Elongation	Hardness*
Cold Drawn Tubing—Annealed	. ⁵ / ₈ " O.D. x .048	43,000	94,000	43.0	65 30-T†
	1" IPS	54,000	99,000	47.0	88
	1" IPS	53,000	100,000	36.0	94
Cold Drawn Wire, Rod—As Drawn	. ⁵ / ₃₂ " Dia.	....	158,000	....	....
	. ⁷ / ₁₆ " Dia.	....	155,500	....	....
	. ³ / ₃₂ " Dia.	....	153,500	....	....
Cold Rolled Sheets—Annealed	.062" x 36" x 96"	41,500	95,500	44.0	80
	.109" x 36" x 96"	37,000	94,000	49.0	77
Cold Rolled Strip—Annealed	.125" x 1 ¹ / ₄ "	43,500	101,500	46.0	83
Hot Rolled Sheets—Annealed	.187" x 26" x 50"	39,000	91,500	50.0	78

*Rockwell B

†"Rockwell Superficial" Hardness

CREEP AND RUPTURE PROPERTIES OF INCOLOY alloy 800 AND INCONEL alloy 600

High-Temperature Strength Properties of Incoloy and Inconel

The two most useful properties employed in the design of structures for high-temperature service are the creep and rupture strengths. The creep strength at a given temperature relates the initially applied stress to a specific rate of plastic deformation in the interval of second-stage creep behavior, during which it is assumed that this rate is approximately constant with time. The rupture strength relates the initial stress to the time required to produce failure.

Since grain size may influence these properties profoundly, it may be desirable to refer to other data published by the International Nickel Company on Inconel and Incoloy.

Continued on next page

DATA

CREEP AND STRESS-RUPTURE PROPERTIES OF INCOLOY alloy 800

Temp. of	Creep Strength		Stress-Rupture Strength	
	Stress, PSI., to produce a minimum creep rate of: 0.01 per cent in 1,000 hr.	0.10 per cent in 1,000 hr.	Stress, PSI., for rupture in: 100 hr.	1,000 hr.
1400	1150	1500	9000	4500
1600	250	500	3700	2300
1800	250	500	2800	1700
2000	....	200	1300	850

CREEP AND STRESS-RUPTURE PROPERTIES OF INCONEL alloy 600

Temp. of	Creep Strength		Stress-Rupture Strength	
	Stress, PSI., to produce an elongation of: 0.1 per cent in 10,000 hr.	1.0 per cent in 10,000 hr.	Stress, PSI., for rupture in: 100 hr.	1,000 hr.
800	46,000	57,000	.....	.....
900	30,000	42,000	.....	.....
1000	14,500	25,000	50,000	34,000
1100	7,200	12,000	.....	.....
1200	5,500	9,300	21,000	12,000
1300	4,000 (4,000*)	6,400	.....	.....
1400	1,700	3,500	8,500	5,500
1500	680	1,400 (3,100*)	.....	.....
1600	460 (1,700*)	640 (2,000*)	4,500	2,700
1700	350	450 (1,100*)	.....	.....
1800	340 (340*)	560 (560*)	2,500 (2,800*)	1,560 (1,700*)
2000 (270*) (1,350*) (880*)

*Annealed at 2000° F. prior to testing.

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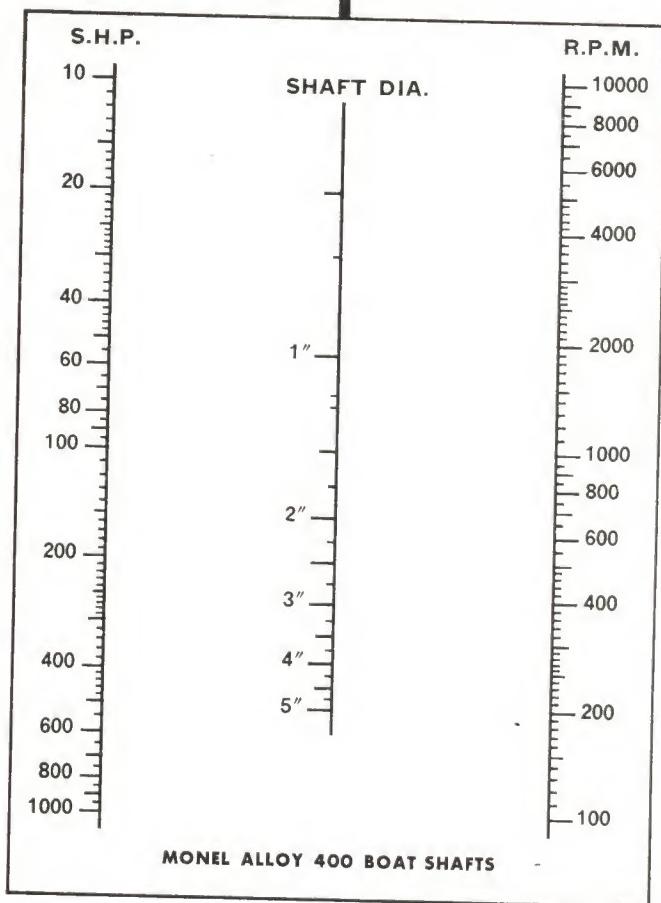
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INDUSTRIAL PRODUCTS

MONEL alloy 400 BOAT SHAFT SIZES



A straight line drawn across the chart indicates the relations between the three factors, Shaft Horsepower, Revolutions per Minute and Diameter. For instance, for a 100-Horsepower engine turning at 1000 revolutions per minute the chart indicates a shaft size of $1\frac{1}{2}$ " diameter.

This would be for an engine which has no reduction gears. If a heavier propeller were used in the same set of conditions with a gear reduction of $2\frac{1}{2}$ to 1, it would be necessary to go to approx-

Continued on next page

DATA

MONEL alloy 400 BOAT SHAFT SIZES (Continued)

imately a $2\frac{1}{8}$ " dia. shaft to accommodate the decreased r.p.m. (approximately 400).

In general the relation of engine speed to Shaft Speed is effected by the use of mechanical reduction gears with the subsequent increase of propeller size which the engine can drive with such relief. With this set of circumstances it becomes necessary to carry a heavier propeller. This is accomplished by cantilevering the propeller out beyond the stern bearing, and would normally call for a longer size tail shaft to accomodate the additional weight and torque for the increased load.

Because of a lower yield point and modulus of elasticity than Monel, naval bronze shafting should be increased by 20% above the determined value for Monel.

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BURSTING PRESSURE OF SEAMLESS TUBING

This section is intended for use as a guide only. Although the data is taken from authoritative sources we cannot be responsible for the accuracy of the methods or tables. Complete information on bursting pressures is given in the ASME Boiler Code.

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The information that follows refers specifically to seamless tubing which has received sufficient cold work during fabrication to produce a fine to medium grain structure. Welded tubing, brazed tubing, hot-rolled seamless tubing, and large-size, cold-drawn seamless tubing are not included in this discussion. Their properties depend upon methods of manufacture and may or may not conform to the following comments.

Continued on next page

BURSTING PRESSURE OF SEAMLESS TUBING (Continued)

INTERNAL PRESSURE

For all ordinary calculations pertaining to the bursting strength of commercial seamless tubes and pipes in straight lengths, regardless of material, Barlow's Formula (1) is the one most used. The inappreciable theoretical error resulting from its use is on the side of safety. This formula, as given below, was adopted by the ASME Boiler Construction Code (U-20) for determining internal pressure of non-ferrous tubes and pipes.

$$P = \frac{2St}{D} \text{ or } t = \frac{PD}{2S} \dots \dots \dots (1)$$

where: P = maximum allowable working pressure, in pounds per square inch.

t = minimum wall thickness, in inches.

$S = \frac{\text{Tensile Strength}}{\text{Factor of Safety}}$ = maximum allowable working stress from Tables A and B (pages 390 and 391) for ASME code requirements.

D = Outside diameter of pipe, in inches.

The usual factors of safety for non-code requirements are:

Power (steam)	5
Liquids	4
Air and Gas	3

The formula is subject to the following instructions:

- (a) Applicable only to diameters $\frac{1}{2}$ inch outside diameter to 6 inches outside diameter, inclusive, and for wall thicknesses not less than No. 18 Bwg. (0.049 inch).
 - (b) Additional wall thickness should be provided where corrosion is expected.
 - (c) Where tube ends are threaded, additional wall thickness of 0.8
_____ is to be provided.
number of threads per inch
 - (d) The requirements for rolling or otherwise setting tubes in tube plates, may require additional wall thickness.

The code provides the limiting stresses for use in the design of pressure vessels and it is necessary to take account of the effect of static head that may be produced in any part in order that such stress limits be not exceeded.

DATA

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BURSTING PRESSURE OF SEAMLESS TUBING (Continued)

TABLE A — MAXIMUM ALLOWABLE DESIGN STRESSES FOR NONFERROUS MATERIALS

(From Table U-3 of ASME Code for Unified Pressure Vessels)

MATERIAL	ASME Spec.	Condition	Spec. Min. Tensile	Psi. for Metal Temperatures Not Exceeding deg. F.								
				10	150	250	300	350	400	450	500	550
Moneal Seamless Pipe or Tube	SB-163	Annealed	65,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000
Moneal Seamless Pipe or Tube	SB-165	Annealed	65,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000
Nickel Seamless Pipe or Tube	SB-161	Annealed	60,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Nickel Seamless Pipe or Tube	SB-161	As-drawn	80,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Nickel Seamless Pipe or Tube	SB-163	Annealed	60,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Nickel Seamless Pipe or Tube	SB-163	As-drawn	1	65,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000	13,000
Nickel Seamless Pipe or Tube	SB-167	Annealed	80,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000
Inconel Seamless Pipe or Tube	SB-167	Annealed	2	55,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Copper-Nickel (70-30) Seamless Condenser Tubes	SB-111	Annealed	2	50,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Copper-Nickel (80-20) Seamless Condenser Tubes	SB-111	Annealed	2	50,000	10,000	9,000	7,000	2,000	1,500	1,500	1,500	1,500
Muntz Metal Seamless Pipe	SB-43	Annealed	2	50,000	10,000	9,000	7,000	2,000	1,500	1,500	1,500	1,500
High Brass Seamless Condenser Tubes	SB-43	Annealed	2	45,000	9,000	9,000	7,000	6,000	3,000	3,000	3,000	3,000
Red Brass Seamless Condenser Tubes	SB-111	Annealed	2	40,000	8,000	8,000	7,000	6,000	3,000	3,000	3,000	3,000
Admiralty Seamless Condenser Tubes	SB-111	Annealed	2	45,000	9,000	9,000	9,000	9,000	5,500	4,500	4,500	4,500
Aluminum Brass Seamless Condenser Tubes	SB-111	Annealed	2	45,000	9,000	9,000	9,000	9,000	3,000	1,500	1,500	1,500
Copper Seamless Boiler Tubes	SB-13	Annealed	2	30,000	6,000	5,000	4,750	4,500	3,000	3,000	3,000	3,000
Copper Seamless Tube and Pipe	SB-42	Annealed	2	30,000	6,000	5,000	4,750	4,500	3,000	3,000	3,000	3,000
Copper Seamless Tube and Pipe	SB-42	Light-drawn	2	36,000	7,200	6,000	5,000	4,500	3,000	3,000	3,000	3,000
Copper Seamless Tube and Pipe	SB-42	Hard-drawn	2	50,000	10,000	9,000	7,000	5,000	3,000	3,000	3,000	3,000
Copper Seamless Tubes	SB-75	Annealed	2	30,000	6,000	5,000	4,750	4,500	3,000	3,000	3,000	3,000
Copper Seamless Tubes	SB-75	Light-drawn	2	36,000	7,200	6,000	5,000	4,500	3,000	3,000	3,000	3,000
Copper Seamless Tubes	SB-75	Hard-drawn	2	50,000	10,000	9,000	7,000	5,000	3,000	3,000	3,000	3,000
Copper Seamless Condenser Tubes	SB-111	Light-drawn	2	36,000	7,200	6,000	5,000	4,500	3,000	3,000	3,000	3,000
Copper Seamless Condenser Tubes	SB-111	Hard-drawn	2	50,000	10,000	9,000	7,000	5,000	3,000	3,000	3,000	3,000

1—As-drawn, stress-equalized "condenser tubes".

2—"Minimum tensile strength" not given in specification.

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BURSTING PRESSURE OF SEAMLESS TUBING (Continued)

TABLE B—MAXIMUM ALLOWABLE WORKING STRESSES FOR FERROUS MATERIALS
(From Table U-2 of ASME Code for Unfired Pressure Vessels)

MATERIAL	ASME Spec.	Note	Spec. Min.	Ps for Metal Temperatures Not Exceeding deg. F.									
				20	650	700	750	800	850	900	950	1000	1050
Seamless Alloy Steel Pipe and Tubes	SA-158-P3a		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-molybdenum	SA-158-P3b		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
4-6 per cent Chromium	SA-158-P3c		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
4-6 per cent Chromium-silicon molybdenum	SA-158-P3d		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
4-6 per cent Chromium-molybdenum stabilized	SA-158-P5c		60,000	11,000	11,000	11,000	10,850	10,000	8,000	5,850	3,850	2,200	1,400
18 Chromium-8 Nickel	SA-158-P8a	2	75,000	15,000	15,000	14,600	14,300	14,000	12,300	10,000	8,000	6,000	4,600
18 Chromium-10 Nickel stabilized	SA-158-P8b		75,000	15,000	15,000	14,600	14,300	14,000	12,300	10,000	8,000	6,000	4,600
Chromium-molybdenum	SA-158-P11		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-molybdenum	SA-213-T3		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-molybdenum	SA-213-T5		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-nickel	SA-213-T8	2	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-silicon-molybdenum	SA-213-T11		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-molybdenum	SA-213-T12		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-silicon-molybdenum	SA-213-T13		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-molybdenum-titanium	SA-213-T14		60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850	2,200
Chromium-nickel-titanium	SA-213-T16		75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-nickel-columbium	SA-213-T18		75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-nickel-molybdenum	SA-213-T20	2	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Electric-Resistance-Welded Alloy Steel													
Chromium-nickel	SA-249-T8	3	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-nickel-titanium	SA-249-T18	3	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-nickel-columbium	SA-249-T19	3	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-nickel-molybdenum	SA-249-T20	3	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000
Chromium-nickel-molybdenum	SA-249-T24	3	75,000	15,000	15,000	14,600	14,300	14,000	13,400	12,300	10,000	8,000	6,000

1—These stresses permitted only with molybdenum.

2—No allowance has been made for corrosive action in the allowable stresses given. Carbide precipitation in service is also to be expected at temperatures above 750° F.

3—These are base stresses for the material; they must be modified for the particular type of longitudinal joint in accordance with Table U-4 of ASME Code for Unfired Pressure Vessels.

DATA

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HARDNESS CONVERSION TABLE (APPROXIMATE)

Values vary depending on grades and conditions of material involved. Rockwell "B" Scale should not be used over B-100. The "C" Scale should not be used under C-20.

Brinell Hard No.	Rockwell		Shore Sclero-scope Hard No.	Tensile Lbs. Sq. In. In 1000 Lbs.	Brinell Hard No.	Rock-well B Scale	Shore Sclero-scope Hard No.	Tensile Lbs. Sq. In. In 1000 Lbs.
	B Scale	C Scale						
782	72	107	383	163	84	25	84	
744	69	100	365	159	83	25	82	
713	67	96	350	156	82	24	80	
683	65	92	334	153	81	24	79	
652	63	88	318	149	80	23	78	
627	61	85	307	146	78	23	77	
600	59	81	294	143	77	22	76	
578	58	78	284	140	76	..	74	
555	56	75	271	137	75	..	73	
532	54	72	260	134	74	..	71	
512	52	70	251	131	72	..	70	
495	51	68	242	128	71	..	69	
477	49	66	233	126	70	..	67	
460	48	64	226	124	69	..	66	
444	47	61	217	121	67	..	65	
430	45	59	210	118	66	..	63	
418	44	57	205	116	65	..	62	
402	43	55	197	114	64	..	61	
387	41	53	189	112	62	..	60	
375	40	52	183	109	61	..	59	
364	39	50	178	107	59	..	58	
351	38	49	172	105	58	..	57	
340	37	47	167	103	57	..	56	
332	36	46	162	101	56	..	55	
321	35	45	157	99	54	..	54	
311	34	44	152	97	53	..	53	
302	33	42	148	96	52	..	53	
293	31	41	144	95	51	..	52	
286	30	40	140	93	50	..	52	
277	29	39	136	92	49	..	51	
269	28	38	132	90	48	..	50	
262	27	37	128	88	47	..	49	
255	26	36	125	87	46	..	48	
248	25	36	121	86	45	..	48	
241	100	24	35	118	85	44	..	47
235	99	23	34	115	83	43	..	47
228	98	22	33	113	82	42	..	46
223	97	21	33	109	81	41	..	46
217	96	20	32	106	80	40	..	45
212	95	..	31	104	79	39	..	45
207	94	..	30	101	78	38	..	44
202	93	..	30	99	77	37	..	44
196	92	..	29	96	76	36	..	43
192	91	..	29	94	75	35	..	43
187	90	..	28	91	74	33	..	42
183	89	..	28	90	73	31	..	42
179	88	..	27	89	72	30	..	41
174	87	..	27	88	71	29	..	41
170	86	..	26	86	70	27	..	40
166	85	..	26	85	69	26	..	40

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DIMENSIONS FOR SEAMLESS AND WELDED PIPE COMMONLY USED FOR CORROSION SERVICE

Nom. Pipe Size	Outside Diam.	Schedule 5S		Schedule 10S		Schedule 10		Schedule 20		Schedule 30		Schedule 40 S and Standard Wt. (B)		Schedule 40 (B)		Schedule 60	
		Wall Thick.	Inside Diam.	Wall Thick.	Inside Diam.	Wall Thick.	Inside Diam.	Wall Thick.									
1/8	.405	.....	.....	.049	.....	.307	.....	.....	.....	.....	.....	.068	.....	.269	.....	.....	.....
1/4	.540	.....	.....	.065	.....	.410	.....	.....	.....	.....	.....	.088	.....	.364	.....	.....	.....
3/8	.675	.....	.....	.071	.....	.545	.....	.....	.....	.....	.....	.109	.....	.493	.....	.....	.....
1/2	.840	.....	.....	.083	.....	.674	.....	.....	.....	.....	.....	.109	.....	.622	.....	.....	.....
5/8	1.080	.....	.....	.092	.....	.804	.....	.....	.....	.....	.....	.113	.....	.824	.....	.....	.....
1	1.315	.....	.....	.1185	.....	.109	.....	.109	.....	.....	.....	.133	.....	1.049	.....	.....	.....
1 1/4	1.660	.....	.....	1.530	.....	.1442	.....	.....	.....	.....	.....	.140	.....	1.380	.....	.....	.....
1 1/2	1.900	.....	.....	1.770	.....	.1682	.....	.....	.....	.....	.....	.145	.....	1.610	.....	.....	.....
2	2.375	.....	.....	2.245	.....	.109	.....	.2157	.....	.....	.....	.154	.....	.2067	.....	.....	.....
2 1/2	2.875	.....	.....	2.709	.....	.120	.....	.2635	.....	.....	.....	.203	.....	.2469	.....	.....	.....
3	3.500	.....	.....	3.334	.....	.120	.....	.2630	.....	.....	.....	.216	.....	.3068	.....	.....	.....
3 1/2	4.000	.....	.....	3.834	.....	.120	.....	.2760	.....	.....	.....	.226	.....	.3548	.....	.....	.....
4	4.560	.....	.....	4.334	.....	.120	.....	.4260	.....	.....	.....	.237	.....	.426	.....	.....	.....
5	5.563	.....	.....	5.345	.....	.134	.....	.5295	.....	.....	.....	.258	.....	.5047	.....	.....	.....
6	6.625	.....	.....	6.407	.....	.134	.....	.6357	.....	.....	.....	.280	.....	.6065	.....	.....	.....
8	8.625	.....	.....	8.407	.....	.148	.....	8.329	.....	.....	.....	.322	.....	.7981	.....	.....	.....
10	10.750	.....	.....	10.482	.....	.165	.....	10.420	.....	.....	.....	.365	.....	.10,020	.....	.....	.....
12	12.750	.....	.....	12.448	.....	.180	.....	12.390	.....	.....	.....	.395	.....	.12,000	.....	.....	.....
14	14.000	.....	.....	13.684	.....	.188(A)	.....	13.624	.....	.....	.....	.438	.....	.13,124	.....	.....	.....
16	16.000	.....	.....	15.670	.....	.188(A)	.....	15.624	.....	.....	.....	.438	.....	.13,250	.....	.....	.....
18	18.000	.....	.....	17.655	.....	.188(A)	.....	17.624	.....	.....	.....	.438	.....	.15,250	.....	.....	.....
20	20.000	.....	.....	19.624	.....	.198(A)	.....	19.550	.....	.....	.....	.500	.....	.16,750	.....	.....	.....
24	24.000	.....	.....	23.564	.....	.218(A)	.....	23.500	.....	.....	.....	.562	.....	.19,000	.....	.....	.....

All dimensions are in inches.

Dimensions for Standard Weight, Extra Strong, Double Extra Strong, Schedules 10, 20, 30, 40, 60, 80, 100, 120, 140 and 160 are in conformance with A.S.A. B36.10.

Dimensions for Schedules 5S, 10S, 40S, and 80S are in conformance with A.S.A. B36.19.

(A) Proposed wall thickness for Schedules 5S and 10S.

(B) Wall thicknesses for Schedules 40, 40S, and Standard Weight

are identical through 10" size.

(C) Wall thicknesses for Schedules 80, 80S, and Extra Strong are identical through 8" size.

(1) Thickness agrees with that for Standard Weight Pipe (A.S.A. B36.10); not included in Schedule 40S.

(2) Thickness agrees with that for Extra Strong Pipe (A.S.A. B36.10); not included in Schedule 80S.

DATA

DIMENSIONS FOR SEAMLESS AND WELDED PIPE

DIMENSIONS FOR SEAMLESS AND WELDED PIPE COMMONLY USED FOR CORROSION SERVICE—Continued

Nom. Pipe Size	Schedule 80 and Extra Strong (C)			Schedule 100			Schedule 120			Schedule 140			Schedule 160			Double X Strong		
	Outside Diam.	Inside Diam.	Wall Thick.	Outside Diam.	Inside Diam.	Wall Thick.												
1/8	.405	.095	.215	.095	.215	.302	.119	.302	.126	.423	.126	.423	.147	.546	.154	.546	.187	.466
1/4	.540	.119	.302	.119	.302	.423	.126	.423	.147	.546	.147	.546	.174	.742	.174	.742	.218	.614
3/8	.675	.126	.423	.126	.423	.546	.147	.546	.154	.742	.154	.742	.192	.957	.192	.957	.250	.815
1/2	.840	.147	.546	.147	.546	.742	.174	.742	.179	.957	.179	.957	.228	1.191	.228	1.191	.250	.995
5/8	.950	.154	.742	.154	.742	.957	.179	.957	.179	.957	.179	.957	.276	2.373	.276	2.373	.300	1.250
3/4	1.050	.174	.957	.174	.957	1.191	.192	1.191	1.228	1.560	1.228	1.560	.318	3.384	.318	3.384	.348	1.600
7/8	1.166	.191	1.178	1.178	1.191	1.560	2.00	1.560	1.560	2.188	1.560	2.188	.337	4.826	.337	4.826	.375	2.000
1 1/8	1.900	.200	1.590	1.590	1.590	2.188	1.939	1.939	2.188	2.323	2.188	2.323	.375	4.826	.375	4.826	.400	1.100
1 1/4	2.375	.218	2.118	2.118	2.118	2.323	2.118	2.118	2.118	2.323	2.118	2.323	.375	4.826	.375	4.826	.436	1.563
1 3/8	2.875	.276	2.273	2.273	2.273	2.900	2.716	2.716	2.716	3.290	2.716	3.290	.375	4.826	.375	4.826	.552	1.771
1 1/2	3.500	.300	2.900	2.900	2.900	3.290	3.000	3.000	3.000	3.290	3.000	3.290	.375	4.826	.375	4.826	.600	2.300
1 5/8	4.000	.318	3.318	3.318	3.318	3.826	3.318	3.318	3.318	3.826	3.318	3.826	.375	4.826	.375	4.826	.667	2.771
1 3/4	4.563	.337	3.377	3.377	3.377	4.113	3.377	3.377	3.377	4.113	3.377	4.113	.375	4.826	.375	4.826	.726	3.152
2	5.563	.375	4.826	4.826	4.826	5.563	4.826	4.826	4.826	5.563	4.826	5.563	.375	4.826	.375	4.826	.785	3.512
2 1/8	6.625	.437	5.761	5.761	5.761	6.625	5.761	5.761	5.761	6.625	5.761	6.625	.375	4.826	.375	4.826	.844	4.063
2 1/4	8.625	.500	7.625	7.625	7.625	8.625	7.500	7.625	7.625	8.625	7.500	8.625	.375	4.826	.375	4.826	.897	4.897
2 5/8	10.750	.500	9.750	9.750	9.750	10.750	9.593	9.750	9.750	10.750	9.593	10.750	.375	4.826	.375	4.826	.875	6.875
3	12.750	.500	11.750	11.750	11.750	12.750	10.887	11.750	11.750	12.750	10.887	12.750	.375	4.826	.375	4.826	1.125	8.500
3 1/8	14.000	.500 (2)	13.000	13.000	13.000	14.000	12.500	13.000	13.000	14.000	12.500	14.000	.375	4.826	.375	4.826	1.312	10.500
3 1/4	16.000	.500 (2)	15.000	15.000	15.000	16.000	14.314	15.000	15.000	16.000	14.314	16.000	.375	4.826	.375	4.826	1.406	11.188
3 5/8	18.000	.500 (2)	17.000	17.000	17.000	18.000	16.126	17.000	17.000	18.000	16.126	18.000	.375	4.826	.375	4.826	1.593	12.814
4	20.000	.500 (2)	19.000	19.000	19.000	20.000	17.938	19.000	19.000	20.000	17.938	20.000	.375	4.826	.375	4.826	1.781	14.438
4 1/8	24.000	.500 (2)	23.000	23.000	23.000	24.000	21.564	23.000	23.000	24.000	21.564	23.000	.375	4.826	.375	4.826	1.934	16.064
4 1/4																		

All dimensions are in inches.

Dimensions for Standard Weight, Extra Strong, Double Extra Strong, Schedules 10, 20, 30, 40, 60, 80, 100, 120, 140 and 160 are in conformance with A.S.A. B36.10.

Dimensions for Schedules 5S, 10S, 40S, and 80S are in conformance with A.S.A. B36.19.

(A) Proposed wall thickness for Schedules 5S and 10S.

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(B) Wall thicknesses for Schedules 40, 40S, and Standard Weight are identical through 10" size.

(C) Wall thicknesses for Schedules 80, 80S, and Extra Strong are identical through 8" size.

(1) Thickness agrees with that for Standard Weight Pipe (A.S.A. B36.10); not included in Schedule 40S.

(2) Thickness agrees with that for Extra Strong Pipe (A.S.A. B36.10); not included in Schedule 80S.

IANA

OKLAHOMA

DATA

CIRCUMFERENCE AND AREA OF CIRCLES

INDUSTRIAL PRODUCTS

COPPER

DATA

Diameter In Inches	Circumference		Area Square Feet	Diameter In Inches	Circumference		Area Square Feet
	Feet	Inches			Feet	Inches	
1/16	..	1 3/64	...	4 1/2	1	2 1/8	.1104
1/8	..	2 5/64	...	4 5/8	1	2 1/2	.1167
3/16	..	1 9/32	...	4 3/4	1	2 7/8	.1230
1/4	..	2 5/32	...	4 7/8	1	3 5/16	.1237
5/16	..	6 3/64	...	5	1	3 11/16	.1364
3/8	..	1 11/64	...	5 1/8	1	4 1/16	.1433
7/16	..	1 3/8	...	5 1/4	1	4 7/16	.1503
1/2	..	1 37/64	...	5 3/8	1	4 7/8	.1575
9/16	..	1 49/64	...	5 1/2	1	5 1/4	.1650
5/8	..	1 15/16	...	5 5/8	1	5 5/8	.1726
11/16	..	2 5/32	...	5 3/4	1	6	.1803
3/4	..	2 23/64	...	5 7/8	1	6 7/16	.1883
13/16	..	2 35/64	...	6	1	6 13/16	.1964
7/8	..	2 3/4	...	6 1/8	1	7 3/16	.2046
15/16	..	2 15/16	...	6 1/4	1	7 5/8	.2131
1	..	3 9/64	.0055	6 3/8	1	8	.2217
1 1/8	..	3 1/2	.0069	6 1/2	1	8 3/8	.2304
1 1/4	..	3 7/8	.0085	6 5/8	1	8 3/4	.2394
1 3/8	..	4 5/16	.0103	6 3/4	1	9 3/16	.2485
1 1/2	..	4 11/16	.0123	6 7/8	1	9 9/16	.2578
1 5/8	..	5 1/16	.0144	7	1	9 15/16	.2673
1 3/4	..	5 7/16	.0167	7 1/8	1	10 3/8	.2763
1 7/8	..	5 7/8	.0192	7 1/4	1	10 3/4	.2867
2	..	6 1/4	.0218	7 3/8	1	11 1/8	.2966
2 1/8	..	6 5/8	.0246	7 1/2	1	11 1/2	.3068
2 1/4	..	7	.0276	7 5/8	1	11 15/16	.3164
2 3/8	..	7 7/16	.0308	7 3/4	2	5/16	.3275
2 1/2	..	7 13/16	.0341	7 7/8	2	11/16	.3382
2 5/8	..	8 3/16	.0376	8	2	1 1/8	.3491
2 3/4	..	8 5/8	.0412	8 1/8	2	1 1/2	.3601
2 7/8	..	9	.0451	8 1/4	2	1 7/8	.3712
3	..	9 3/8	.0491	8 3/8	2	2 1/4	.3826
3 1/8	..	9 13/16	.0533	8 1/2	2	2 11/16	.3941
3 1/4	..	10 3/16	.0576	8 5/8	2	3 1/16	.4057
3 3/8	..	10 9/16	.0621	8 3/4	2	3 7/16	.4176
3 1/2	..	10 15/16	.0668	8 7/8	2	3 7/8	.4296
3 5/8	..	11 3/8	.0717	9	2	4 1/4	.4418
3 3/4	..	11 3/4	.0767	9 1/8	2	4 5/8	.4541
3 7/8	1	1 1/8	.0819	9 1/4	2	5	.4667
4	1	9/16	.0873	9 3/8	2	5 7/16	.4794
4 1/8	1	15/16	.0928	9 1/2	2	5 13/16	.4922
4 1/4	1	1 5/16	.0985	9 5/8	2	6 3/16	.5053
4 3/8	1	11 1/16	.1044	9 3/4	2	6 5/8	.5185

To find the weight of a circle, multiply its area in square feet by the weight per square foot, as shown on pages 249 to 252. For example, if you want the weight of an $\frac{1}{8}$ " thick brass circle, 23" in diameter . . .

Multiply 5.508 pounds (weight per sq. ft. of $\frac{1}{8}$ " brass)
 by 2.885 (area in square feet)
 = 15.891 + pounds

Continued on next page

DATA

ATION

CIRCUMFERENCE AND AREA OF CIRCLES (Continued)

Diameter In Inches	Circumference		Area Square Feet	Diameter In Inches	Circumference		Area Square Feet
	Feet	Inches			Feet	Inches	
9 7/8	2	7	.5319	16	4	2 1/4	1.396
10	2	7 3/8	.5454	16 1/8	4	2 5/8	1.418
10 1/8	2	7 3/4	.5591	16 1/4	4	3	1.440
10 1/4	2	8 3/16	.5730	16 3/8	4	3 7/16	1.463
10 3/8	2	8 9/16	.5871	16 1/2	4	3 13/16	1.485
10 1/2	2	8 15/16	.6013	16 5/8	4	4 1/4	1.508
10 5/8	2	9 3/8	.6157	16 3/4	4	4 5/8	1.530
10 3/4	2	9 3/4	.6303	16 7/8	4	5	1.553
10 7/8	2	10 1/8	.6450	17	4	5 3/8	1.576
11	2	10 1/2	.6600	17 1/8	4	5 3/4	1.599
11 1/8	2	10 15/16	.6750	17 1/4	4	6 3/16	1.623
11 1/4	2	11 5/16	.6902	17 3/8	4	6 9/16	1.647
11 3/8	2	11 11/16	.7057	17 1/2	4	6 15/16	1.670
11 1/2	3	1 1/8	.7213	17 5/8	4	7 5/16	1.694
11 5/8	3	1 1/2	.7371	17 3/4	4	7 3/4	1.712
11 3/4	3	7/8	.7530	17 7/8	4	8 1/8	1.743
11 7/8	3	1 1/4	.7690	18	4	8 1/2	1.767
12	3	1 11/16	.7854	18 1/8	4	8 15/16	1.792
12 1/8	3	2 1/16	.8019	18 1/4	4	9 5/16	1.817
12 1/4	3	2 7/16	.8185	18 3/8	4	9 3/4	1.842
12 3/8	3	2 7/8	.8353	18 1/2	4	10 1/16	1.866
12 1/2	3	3 1/4	.8523	18 5/8	4	10 1/2	1.892
12 5/8	3	3 5/8	.8694	18 3/4	4	10 7/8	1.918
12 3/4	3	4	.8867	18 7/8	4	11 1/4	1.943
12 7/8	3	4 7/16	.9041	19	4	11 5/8	1.968
13	3	4 13/16	.9218	19 1/8	5	1 1/16	1.995
13 1/8	3	5 3/16	.9396	19 1/4	5	7/16	2.021
13 1/4	3	5 5/8	.9576	19 3/8	5	13/16	2.047
13 3/8	3	6	.9757	19 1/2	5	1 1/4	2.074
13 1/2	3	6 3/8	.9940	19 5/8	5	1 5/8	2.100
13 5/8	3	6 3/4	1.013	19 3/4	5	2	2.127
13 3/4	3	7 3/16	1.031	19 7/8	5	2 7/16	2.154
13 7/8	3	7 9/16	1.050	20	5	2 13/16	2.181
14	3	7 15/16	1.069	20 1/8	5	3 3/16	2.209
14 1/8	3	8 3/8	1.088	20 1/4	5	3 9/16	2.237
14 1/4	3	8 3/4	1.108	20 3/8	5	4	2.264
14 3/8	3	9 1/8	1.127	20 1/2	5	4 3/8	2.292
14 1/2	3	9 1/2	1.147	20 5/8	5	4 3/4	2.320
14 5/8	3	9 15/16	1.167	20 3/4	5	5 3/16	2.348
14 3/4	3	10 5/16	1.187	20 7/8	5	5 9/16	2.377
14 7/8	3	10 11/16	1.207	21	5	5 15/16	2.405
15	3	11 1/16	1.227	21 1/8	5	6 5/16	2.434
15 1/8	3	11 1/2	1.248	21 1/4	5	6 3/4	2.463
15 1/4	3	11 5/8	1.268	21 3/8	5	7 1/8	2.492
15 3/8	4	1 1/4	1.289	21 1/2	5	7 1/2	2.521
15 1/2	4	5/8	1.310	21 5/8	5	7 7/8	2.551
15 5/8	4	1 1/16	1.332	21 3/4	5	8 5/16	2.580
15 3/4	4	1 1/8	1.353	21 7/8	5	8 11/16	2.607
15 7/8	4	1 15/16	1.375	22	5	9 1/16	2.639

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IANA

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OKLAHOMA

DATA

INDUSTRIAL PRODUCTS

DATA

CIRCUMFERENCE AND AREA OF CIRCLES (Continued)

Diameter In Inches	Circumference		Area Square Feet	Diameter In Inches	Circumference		Area Square Feet
	Feet	Inches			Feet	Inches	
22 1/8	5	9 1/2	2.670	32 1/2	8	6 1/16	5.760
22 1/4	5	9 7/8	2.700	32 3/4	8	6 7/8	5.849
22 3/8	5	10 1/4	2.730	33	8	7 5/8	5.939
22 1/2	5	10 5/8	2.761	33 1/4	8	8 7/16	6.029
22 5/8	5	11 1/16	2.792	33 1/2	8	9 3/16	6.121
22 3/4	5	11 7/16	2.823	33 3/4	8	10	6.212
22 7/8	5	11 13/16	2.854	34	8	10 1/3/16	6.305
23	6	1/4	2.885	34 1/4	8	11 9/16	6.398
23 1/8	6	5/8	2.917	34 1/2	9	3/8	6.490
23 1/4	5	1	2.948	34 3/4	9	1 1/8	6.581
23 3/8	6	1 1/8	2.980	35	9	1 15/16	6.681
23 1/2	6	1 13/16	3.012	35 1/4	9	2 11/16	6.771
23 5/8	6	2 3/16	3.044	35 1/2	9	3 1/2	6.873
23 3/4	6	2 9/16	3.076	35 3/4	9	4 1/4	6.970
23 7/8	6	3	3.109	36	9	5 1/16	7.068
24	6	3 3/8	3.141	36 1/4	9	5 7/8	7.167
24 1/4	6	4 1/8	3.207	36 1/2	9	6 5/8	7.266
24 1/2	6	4 15/16	3.274	36 3/4	9	7 7/16	7.361
24 3/4	6	5 5/8	3.341	37	9	8 3/16	7.466
25	6	6 1/2	3.408	37 1/4	9	9	7.568
25 1/4	6	7 5/16	3.477	37 1/2	9	9 3/4	7.670
25 1/2	6	8 1/16	3.546	37 3/4	9	10 1/16	7.770
25 3/4	6	8 7/8	3.616	38	9	11 1/8	7.875
26	6	9 5/8	3.687	38 1/4	10	1 1/16	7.979
26 1/4	6	10 7/16	3.758	38 1/2	10	15/16	8.081
26 1/2	6	11 1/4	3.830	38 3/4	10	1 11/16	8.189
26 3/4	7	...	3.900	39	10	2 1/2	8.295
27	7	13 1/16	3.976	39 1/4	10	3 1/4	8.403
27 1/4	7	1 9/16	4.050	39 1/2	10	4 1/16	8.509
27 1/2	7	2 3/8	4.125	39 3/4	10	4 7/8	8.618
27 3/4	7	3 1/8	4.200	40	10	5 5/8	8.726
28	7	3 15/16	4.276	40 1/4	10	6 7/16	8.831
28 1/4	7	4 11/16	4.353	40 1/2	10	7 3/16	8.941
28 1/2	7	5 1/2	4.430	40 3/4	10	8	9.051
28 3/4	7	6 1/4	4.508	41	10	8 3/4	9.168
29	7	7 1/16	4.586	41 1/4	10	9 9/16	9.280
29 1/4	7	7 7/8	4.666	41 1/2	10	10 3/8	9.391
29 1/2	7	8 5/8	4.746	41 3/4	10	11 1/8	9.501
29 3/4	7	9 7/16	4.827	42	10	11 15/16	9.621
30	7	10 3/16	4.908	42 1/4	11	1 1/16	9.736
30 1/4	7	11	4.990	42 1/2	11	1 1/2	9.851
30 1/2	7	11 13/16	5.073	42 3/4	11	2 1/4	9.968
30 3/4	8	9/16	5.157	43	11	3 1/16	10.084
31	8	1 1/8	5.241	43 1/4	11	3 13/16	10.202
31 1/4	8	2 1/8	5.326	43 1/2	11	4 5/8	10.320
31 1/2	8	2 15/16	5.412	43 3/4	11	5 3/8	10.439
31 3/4	8	3 11/16	5.498	44	11	6 3/16	10.559
32	8	4 1/2	5.585	44 1/4	11	7	10.679
32 1/4	8	5 5/16	5.672	44 1/2	11	7 3/4	10.800

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DATA

ATION

CIRCUMFERENCE AND AREA OF CIRCLES (Continued)

Diameter In Inches	Circumference		Area Square Feet	Diameter In Inches	Circumference		Area Square Feet
	Feet	Inches			Feet	Inches	
44 $\frac{3}{4}$	11	8 $\frac{9}{16}$	10.922	57	14	11 $\frac{1}{16}$	17.721
45	11	9 $\frac{3}{8}$	11.044	57 $\frac{1}{4}$	14	11 $\frac{13}{16}$	17.876
45 $\frac{1}{4}$	11	10 $\frac{1}{8}$	11.161	57 $\frac{1}{2}$	15	5 $\frac{5}{8}$	18.032
45 $\frac{1}{2}$	11	10 $\frac{15}{16}$	11.290	57 $\frac{3}{4}$	15	1 $\frac{3}{8}$	18.190
45 $\frac{3}{4}$	11	11 $\frac{11}{16}$	11.415	58	15	2 $\frac{3}{16}$	18.348
46	12	1 $\frac{1}{2}$	11.540	58 $\frac{1}{4}$	15	2 $\frac{5}{16}$	18.506
46 $\frac{1}{4}$	12	1 $\frac{1}{4}$	11.666	58 $\frac{1}{2}$	15	3 $\frac{3}{4}$	18.665
46 $\frac{1}{2}$	12	2 $\frac{1}{16}$	11.793	58 $\frac{3}{4}$	15	4 $\frac{9}{16}$	18.825
46 $\frac{3}{4}$	12	2 $\frac{13}{16}$	11.920	59	15	5 $\frac{5}{16}$	18.986
47	12	3 $\frac{3}{8}$	12.048	59 $\frac{1}{4}$	15	6 $\frac{1}{8}$	19.147
47 $\frac{1}{4}$	12	4 $\frac{7}{16}$	12.177	59 $\frac{1}{2}$	15	6 $\frac{7}{8}$	19.309
47 $\frac{1}{2}$	12	5 $\frac{3}{16}$	12.306	59 $\frac{3}{4}$	15	7 $\frac{11}{16}$	19.471
47 $\frac{3}{4}$	12	6	12.436	60	15	8 $\frac{1}{2}$	19.635
48	12	6 $\frac{3}{4}$	12.566	60 $\frac{1}{4}$	15	9 $\frac{1}{4}$	19.799
48 $\frac{1}{4}$	12	7 $\frac{7}{16}$	12.697	60 $\frac{1}{2}$	15	10 $\frac{1}{16}$	19.964
48 $\frac{1}{2}$	12	8 $\frac{5}{16}$	12.829	60 $\frac{3}{4}$	15	10 $\frac{13}{16}$	20.129
48 $\frac{3}{4}$	12	9 $\frac{9}{16}$	12.961	61	15	11 $\frac{5}{8}$	20.295
49	12	9 $\frac{15}{16}$	13.095	61 $\frac{1}{4}$	16	3 $\frac{3}{8}$	20.462
49 $\frac{1}{4}$	12	10 $\frac{11}{16}$	13.229	61 $\frac{1}{2}$	16	1 $\frac{3}{16}$	20.623
49 $\frac{1}{2}$	12	11 $\frac{1}{2}$	13.363	61 $\frac{3}{4}$	16	11 $\frac{5}{16}$	20.797
49 $\frac{3}{4}$	13	1 $\frac{1}{4}$	13.499	62	16	2 $\frac{3}{4}$	20.966
50	13	1 $\frac{1}{16}$	13.635	62 $\frac{1}{4}$	16	3 $\frac{9}{16}$	21.135
50 $\frac{1}{4}$	13	1 $\frac{13}{16}$	13.772	62 $\frac{1}{2}$	16	4 $\frac{5}{16}$	21.306
50 $\frac{1}{2}$	13	2 $\frac{5}{8}$	13.909	62 $\frac{3}{4}$	16	5 $\frac{1}{8}$	21.476
50 $\frac{3}{4}$	13	3 $\frac{3}{8}$	14.047	63	16	5 $\frac{5}{8}$	21.648
51	13	4 $\frac{3}{16}$	14.186	63 $\frac{1}{4}$	16	6 $\frac{11}{16}$	21.819
51 $\frac{1}{4}$	13	5	14.325	63 $\frac{1}{2}$	16	7 $\frac{7}{16}$	21.992
51 $\frac{1}{2}$	13	5 $\frac{3}{4}$	14.465	63 $\frac{3}{4}$	16	8 $\frac{1}{4}$	22.166
51 $\frac{3}{4}$	13	6 $\frac{9}{16}$	14.606	64	16	9	22.340
52	13	7 $\frac{7}{16}$	14.748	64 $\frac{1}{4}$	16	9 $\frac{13}{16}$	22.515
52 $\frac{1}{4}$	13	8 $\frac{1}{8}$	14.890	64 $\frac{1}{2}$	16	10 $\frac{5}{8}$	22.695
52 $\frac{1}{2}$	13	8 $\frac{7}{16}$	15.033	64 $\frac{3}{4}$	16	11 $\frac{3}{8}$	22.867
52 $\frac{3}{4}$	13	9 $\frac{11}{16}$	15.176	65	17	3 $\frac{1}{16}$	23.044
53	13	10 $\frac{1}{2}$	15.320	65 $\frac{1}{4}$	17	1 $\frac{15}{16}$	23.222
53 $\frac{1}{4}$	13	11 $\frac{1}{4}$	15.465	65 $\frac{1}{2}$	17	1 $\frac{3}{4}$	23.400
53 $\frac{1}{2}$	14	1 $\frac{1}{16}$	15.611	65 $\frac{3}{4}$	17	2 $\frac{1}{2}$	23.578
53 $\frac{3}{4}$	14	1 $\frac{3}{16}$	15.757	66	17	3 $\frac{5}{16}$	23.758
54	14	1 $\frac{5}{8}$	15.904	66 $\frac{1}{4}$	17	4 $\frac{1}{8}$	23.939
54 $\frac{1}{4}$	14	2 $\frac{3}{8}$	16.052	66 $\frac{1}{2}$	17	4 $\frac{7}{8}$	24.119
54 $\frac{1}{2}$	14	3 $\frac{3}{16}$	16.200	66 $\frac{3}{4}$	17	5 $\frac{11}{16}$	24.307
54 $\frac{3}{4}$	14	4	16.349	67	17	6 $\frac{7}{16}$	24.484
55	14	4 $\frac{3}{4}$	16.499	67 $\frac{1}{4}$	17	7 $\frac{1}{4}$	24.667
55 $\frac{1}{4}$	14	5 $\frac{9}{16}$	16.649	67 $\frac{1}{2}$	17	8	24.851
55 $\frac{1}{2}$	14	6 $\frac{5}{16}$	16.800	67 $\frac{3}{4}$	17	8 $\frac{13}{16}$	25.035
55 $\frac{3}{4}$	14	7 $\frac{1}{8}$	16.952	68	17	9 $\frac{5}{8}$	25.220
56	14	7 $\frac{7}{8}$	17.104	68 $\frac{1}{4}$	17	10 $\frac{3}{8}$	25.406
56 $\frac{1}{4}$	14	8 $\frac{11}{16}$	17.257	68 $\frac{1}{2}$	17	11 $\frac{3}{16}$	25.592
56 $\frac{1}{2}$	14	9 $\frac{1}{2}$	17.411	68 $\frac{3}{4}$	17	11 $\frac{15}{16}$	25.779
56 $\frac{3}{4}$	14	10 $\frac{1}{4}$	17.565	69	18	3 $\frac{3}{4}$	25.967

Continued on next page

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OKLAHOMA

DATA

INDUSTRIAL PRODUCTS

DATA

COPPER

CIRCUMFERENCE AND AREA OF CIRCLES (Continued)

Diameter In Inches	Circumference		Area Square Feet	Diameter In Inches	Circumference		Area Square Feet
	Feet	Inches			Feet	Inches	
69 1/4	18	1 1/2	26.156	91	23	9 7/8	45.166
69 1/2	18	2 5/16	26.345	91 1/2	23	11 7/16	45.663
69 3/4	18	3 1/8	26.535	92	24	1	46.164
70	18	3 7/16	26.725	92 1/2	24	1 9/16	46.667
70 1/4	18	4 11/16	26.920	93	24	4 1/8	47.173
70 1/2	18	5 7/16	27.110	93 1/2	24	5 11/16	47.681
70 3/4	18	6 1/4	27.301	94	24	7 1/4	48.193
71	18	7	27.494	94 1/2	24	8 7/8	48.707
71 1/4	18	7 13/16	27.690	95	24	10 7/16	49.224
71 1/2	18	8 9/16	27.881	95 1/2	25	...	49.743
71 3/4	18	9 9/8	28.080	96	25	1 9/16	50.265
72	18	10 3/16	28.274	96 1/2	25	3 1/8	50.790
72 1/2	18	11 1/4	28.470	97	25	4 11/16	51.318
73	19	1 5/16	29.065	97 1/2	25	6 1/4	51.849
73 1/2	19	2 7/8	29.465	98	25	7 7/8	52.382
74	19	47/16	29.867	98 1/2	25	9 7/16	52.917
74 1/2	19	6	30.272	99	25	11	53.456
75	19	7 9/16	30.680	99 1/2	26	9/16	53.997
75 1/2	19	9 3/16	31.090	100	26	2 1/8	54.542
76	19	10 3/4	31.503	100 1/2	26	3 11/16	55.088
76 1/2	20	5/16	31.920	101	26	5 1/4	55.638
77	20	1 7/8	32.338	101 1/2	26	6 13/16	56.191
77 1/2	20	37/16	32.759	102	26	8 7/16	56.745
78	20	5	33.183	102 1/2	26	10	57.303
78 1/2	20	6 9/16	33.610	103	26	11 9/16	57.863
79	20	8 1/8	34.039	103 1/2	27	1 1/8	58.427
79 1/2	20	9 3/4	34.472	104	27	21/16	58.992
80	20	11 5/16	34.907	104 1/2	27	4 1/4	59.562
80 1/2	21	7/8	35.344	105	27	5 1/3	60.132
81	21	27/16	35.785	105 1/2	27	7 7/16	60.705
81 1/2	21	4	36.228	106	27	9	61.283
82	21	5 9/16	36.674	106 1/2	27	10 9/16	61.861
82 1/2	21	7 1/8	37.122	107	28	1/8	62.446
83	21	8 3/4	37.574	107 1/2	28	1 11/16	63.030
83 1/2	21	10 5/16	38.028	108	28	3 1/4	63.617
84	21	11 7/8	38.485	108 1/2	28	4 13/16	64.208
84 1/2	22	17/16	38.944	109	28	6 3/8	64.801
85	22	3	39.406	109 1/2	28	8	65.396
85 1/2	22	4 9/16	39.872	110	28	9 9/16	65.995
86	22	6 1/8	40.339	110 1/2	28	11 1/8	66.596
86 1/2	22	7 11/16	40.809	111	29	1 1/16	67.201
87	22	9 5/16	41.282	111 1/2	29	2 1/4	67.808
87 1/2	22	10 7/8	41.758	112	29	3 13/16	68.417
88	23	7/16	42.237	112 1/2	29	5 3/8	69.030
88 1/2	23	2	42.718	113	29	7	69.644
89	23	3 9/16	43.202	113 1/2	29	8 9/16	70.262
89 1/2	23	5 1/8	43.689	114	29	10 1/8	70.882
90	23	6 11/16	44.177	114 1/2	29	11 11/16	71.506
90 1/2	23	8 5/16	44.671	115	30	1 1/4	72.131

Continued on next page

DATA

ON

CIRCUMFERENCE AND AREA OF CIRCLES (Continued)

Diameter In Inches	Circumference		Area Square Feet	Diameter In Inches	Circumference		Area Square Feet
	Feet	Inches			Feet	Inches	
115 1/2	30	2 13/16	72.759	118	30	10 11/16	75.944
116	30	4 3/8	73.391	118 1/2	31	1/4	76.589
116 1/2	30	5 15/16	74.026	119	31	1 13/16	77.236
117	30	7 9/16	74.662	119 1/2	31	3 3/8	77.887
117 1/2	30	9 1/8	75.301	120	31	4 15/16	78.540

To find the weight of a circle, multiply its area in square feet by the weight per square foot, as shown on pages 229 to 234. For example, if you want the weight of an $\frac{1}{8}$ " thick brass circle, 23" in diameter . . .

Multiply 5.508 pounds (weight per sq. ft. of $\frac{1}{8}$ " brass)
by 2.885 (area in square feet)
= 15.891 + pounds

IANA

MELTING POINTS

Approximate

Elements	De-grees Centi-grade	De-grees Fahren-heit	Elements	De-grees Centi-grade	De-grees Fahren-heit
ALUMINUM.....	660	1220	MAGNESIUM.....	651	1204
ANTIMONY.....	631	1167	MANGANESE.....	1260	2300
BARIUM.....	850	1562	MERCURY.....	-39	-38
BERYLLIUM.....	1350	2462	MOLYBDENUM...	2620	4748
BISMUTH.....	271	520	NICKEL.....	1446	2635
CADMUM.....	321	610	PHOSPHOROUS (YELLOW).....	44	111
CALCIUM.....	810	1490	PLATINUM.....	1773	3223
CARBON.....	3500	6332	SILICON.....	1420	2588
CHROMIUM.....	1765	3209	SILVER.....	961	1761
COBALT.....	1480	2696	TIN.....	232	449
COPPER.....	1083	1981	TUNGSTEN.....	3400	6152
GOLD.....	1063	1945	VANADIUM.....	1710	3110
IRON.....	1535	2795	ZINC.....	420	787
LEAD.....	327	621			
LITHIUM.....	186	367			

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OKLAHOMA

USEFUL INFORMATION**RELATIVE TO A CIRCLE**

To find Circumference — Multiply the diameter by 3.1416; or, divide diameter by 0.3183.

To find Diameter — Multiply the circumference by 0.3183; or, divide circumference by 3.1416.

To find Radius — Multiply the circumference by 0.15915; or, divide circumference by 6.28318; or, divide diameter by 2.

To find the Side of a Square to be inscribed in a Circle — Multiply diameter by 0.7071; or, multiply the circumference by 0.2251; or, divide the circumference by 4.4428.

To find the Side of a Square to equal the Area of a Circle — Multiply the diameter by 0.8862; or, divide diameter by 1.1284; or, multiply the circumference by 0.2821; or, divide circumference by 3.545.

To find the Area of a Circle — Multiply the circumference by one-quarter of the diameter; or, multiply the square of the diameter by 0.7854; or, multiply the square of the circumference by 0.7958; or, multiply the square of one-half the diameter by 3.1416. Doubling the diameter of a circle increases the area 4 times.

RELATIVE TO A SQUARE

A side multiplied by 1.412 equals the diameter of a circle which will circumscribe the given square.

A side multiplied by 4.443 equals the circumference of its circumscribing circle.

A side multiplied by 1.1284 equals the diameter of a circle equal in area to that given square.

A side multiplied by 3.545 equals circumference of an equal circle.

To find the Area of an Ellipse — Multiply the product of its axes by .7854; or, multiply the product of its semi-axes by 3.14159.

RELATIVE TO OTHER GEOMETRICAL FORMS

To find:

Contents of a cylinder = area of end \times length.

Contents of a wedge = area of triangular base \times altitude.

Surface of a cylinder = length \times circumference plus area of both ends.

Surface of a sphere = diameter squared \times 3.1416; or, diameter \times circumference.

Contents of a sphere = diameter cubed \times 0.5236.

Contents of a pyramid or cone, right or oblique, regular or irregular = area of base \times one-third of the altitude.

Area of a triangle = base \times one-half the altitude.

Area of a parallelogram = base \times altitude.

Area of a trapezoid = altitude \times one-half the sum of parallel sides.

TO FIND THE CAPACITY OF A TANK IN GALLONS

1. All measurements must be reduced to inches.
For rectangular tanks, multiply the length by the width by the depth.
For cylindrical tanks, multiply the length by the square of the diameter by .7854.
For elliptical section tanks, multiply the length by the short diameter by the long diameter by .0389.
2. Divide the result of any of the above calculations by 231, which is the number of cubic inches in a gallon; the result is the capacity of the tank in gallons.

DATA

CONVERSION OF SFM TO RPM

Diameter in Inches	SURFACE FEET PER MINUTE																												
	10	15	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	225	250	275	300			
1/16	.0625	611	917	1222	1528	1833	2445	3056	3667	4278	4889	5500	6111	6722	7334	7945	8556	9167	9778	10390	11000	11612	12223	13751	15279	16807	18334		
1/8	.125	306	458	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584	4869	5195	5500	5806	6111	6875	7639	8403	9167		
3/16	.1875	204	306	407	509	611	764	917	1019	1222	1426	1630	1833	2037	2241	2445	2648	2832	3036	3239	3443	3667	3871	4074	4584	5093	5602	6112	
5/16	.25	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2232	2445	2597	2750	2903	3056	3438	3820	4202	4584		
1/4																													
5/8	.3125	122	183	244	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833	1956	2078	2200	2322	2445	2750	3056	3361	3667		
7/16	.375	102	153	204	256	306	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528	1630	1732	1833	1935	2037	2292	2546	2801	3056		
1/2	.4375	87	131	175	218	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310	1397	1484	1572	1659	1746	1964	2183	2401	2619	2922	
9/16	.5	76	115	153	191	229	306	382	458	533	611	688	764	840	917	993	1070	1146	1222	1299	1375	1451	1528	1719	1910	2101	2292		
11/16	.5625	68	102	136	170	204	272	340	407	475	543	611	679	747	815	883	951	1019	1086	1154	1222	1290	1358	1528	1686	1867	2037		
13/16	.625	56	92	122	153	183	244	306	367	423	491	559	611	679	733	804	872	940	1008	1076	1141	1222	1375	1528	1681	1833	1983		
7/8	.6875	56	83	111	139	167	222	278	333	389	444	500	556	611	667	722	778	833	889	945	1006	1056	1111	1250	1389	1528	1667	1811	
9/8	.75	51	76	102	127	153	203	255	306	357	407	458	509	560	611	662	713	764	815	866	917	968	1019	1146	1273	1401	1528		
11/8	.8125	47	71	94	118	141	188	235	282	329	376	423	470	517	564	611	658	705	752	799	846	893	940	1058	1175	1293	1410		
13/8	.875	44	65	87	118	131	175	218	262	306	349	393	436	489	540	594	656	711	768	829	873	927	982	1091	1200	1310	1420		
15/8	.9375	41	61	81	102	122	163	204	244	284	326	367	406	448	498	540	590	652	702	753	815	874	924	981	1091	1200	1310	1422	
1	1.125	34	51	68	85	102	136	170	204	238	272	306	340	373	407	441	475	509	543	577	611	645	679	764	849	934	1019	1106	
1 1/8	1.125	31	46	61	76	92	122	153	183	214	244	275	306	336	367	397	428	458	489	519	550	581	611	668	764	840	917	983	
1 3/16	1.125	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417	444	472	500	528	556	625	694	764	833	903	
1 1/4	1.125	25	38	51	64	76	102	127	153	178	204	229	255	280	306	331	357	382	407	433	458	484	509	573	637	700	764	833	
1 1/2	1.125	24	35	47	59	70	94	117	141	165	188	212	235	259	282	306	329	353	376	400	423	447	470	529	588	646	705	764	
1 5/8	1.125	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327	349	371	393	415	437	470	529	588	646	705	764
1 3/4	1.125	20	31	41	51	61	81	102	122	143	163	183	204	224	244	265	286	306	326	346	367	387	407	458	509	560	611	667	
2	2.0	19	29	38	48	57	76	95	115	134	153	172	191	210	229	248	267	287	306	325	344	363	382	430	477	525	573	611	
2 1/4	2.25	17	25	34	42	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340	382	424	467	509	573	
2 1/2	2.25	15	23	31	38	46	61	76	92	107	122	137	153	168	183	199	214	229	244	260	275	290	306	344	382	420	458	509	
2 3/4	2.25	14	21	28	35	42	56	69	83	97	111	125	139	153	167	181	194	208	222	236	250	264	278	313	347	382	417	477	
3	3.0	13	19	25	32	38	51	64	76	89	102	115	127	140	153	166	178	191	204	216	229	242	255	286	318	350	382	417	

OKLAHOMA

DATA

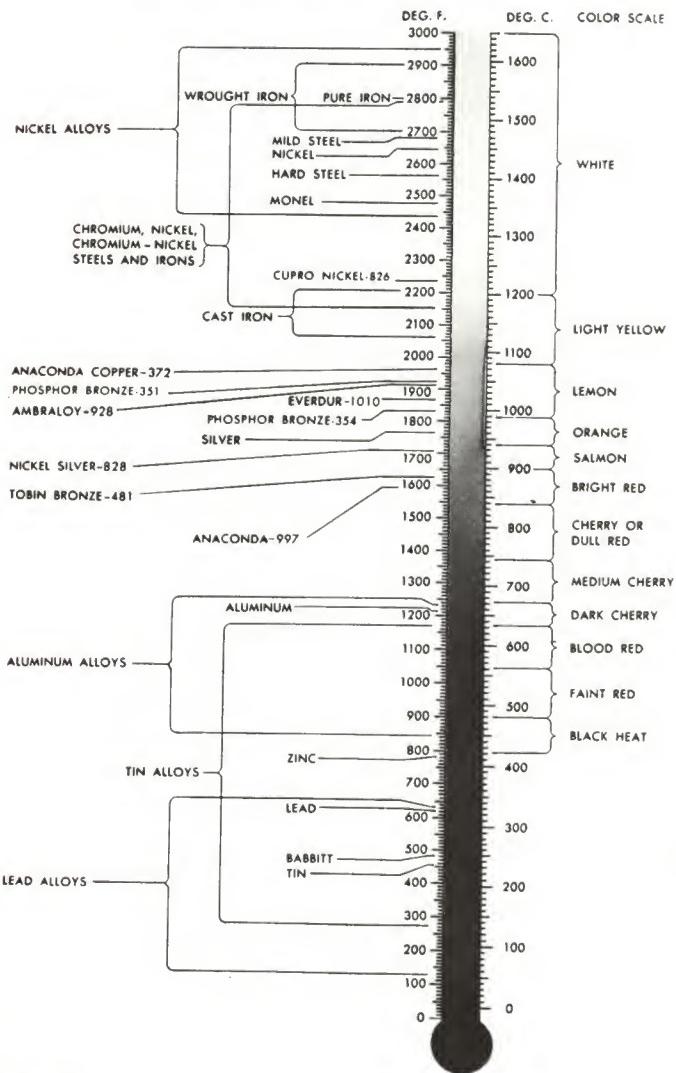
TEMPERATURE CONVERSION FORMULAS

$$F = (C \times 1.8) + 32$$

$$C = \frac{(F - 32)}{9}$$

F = Temperature in Fahrenheit Degrees.
C = Temperature in Centigrade Degrees.

**CONVERSION TABLE, MELTING POINTS AND TEMPERATURE
COLORS OF COMMONLY USED METALS AND ALLOYS**



DATA

COMPARATIVE PHYSICAL PROPERTIES OF METALS

	Density	Melting Point Degrees C	Melting Point Degrees F	Specific Heat	Heat Expansion Per °C	Heat Conductivity % of Cu	Elec. Resist. Per °C	Cost of Elec. Resist. per °C	Modulus of Elasticity psi
1100 Aluminum.....	2.7	660	1220	0.218	.00024	52.	56.59	.0042	10,000,000
2017 Aluminum.....	2.8	600	1110	....	.00022	40.	32.	....	10,000,000
Copper.....	8.89	1083	1981	0.093	.00017	100.	100.	.0040	16,000,000
Brass.....	8.46	900	1630	0.088	.00020	28.	28.	.0015	13,800,000
Phosphor Bronze.....	8.66	*	....	0.104	.00018	....	36.	.0039	16,000,000
Everdur.....	8.30	1050	1920	....	.00017	30.	6.	....	15,000,000
Nickel Silver.....	8.75	*	....	0.095	.00018	7.6	5.2	.0003	17,000,000
Moneal.....	8.80	1300-1350	2370-2460	0.127	.00014	6.6	4.	.0019	26,000,000
Nickel.....	8.85	1446	2635	0.130	.00013	15.5	16.	.0041	30,000,000
Inconel.....	8.55	1370	2500	....	.00013	3.5	....	....	31,000,000
18/8 Cr/Ni Steel.....	7.9	1400	2550	0.118	.00017	3.6	2.8	....	28,600,000
17% Cr Iron.....	7.6	1400	2550	....	.00010	5.	....	.0015	....
14% Cr Iron.....	7.7	1490	2715	....	.00011	5.	2.8	....	30,000,000
Zinc.....	7.14	420	787	0.094	.00029	29.	28.2	.0040	13,700,000
Lead.....	11.38	327	621	0.031	.00029	9.	7.8	.0041	800,000
Iron.....	7.7	1535	2795	0.110	.00013	15.	15.	.0062	25,000,000
Steel.....	7.9	1400	2550	....	.00013	6.12	3.15	....	30,000,000
Cast Iron.....	7.2	1000-1200	1830-2190	....	.00010	10-12	2-12	....	12-27,000,000
Duriron.....	7.0	1260	2300	....	.00028	17.4	2.5	....	....
Silver.....	10.51	961	1761	0.056	.00019	110.	106.	.0040	9,000,000
Platinum.....	21.5	1755	3190	0.032	.00008	18.	15.	.0036	23,000,000

*Varies according to grade — consult us.
These figures should not be used for specification purposes because they are subject to manufacturing limitations which may alter the values.

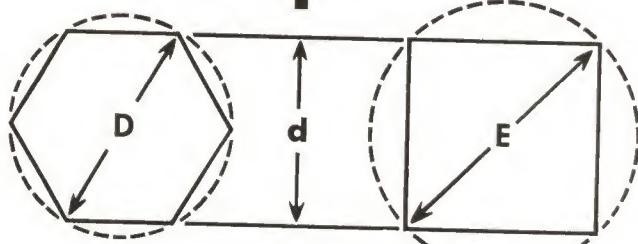
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OKLAHOMA

SIZES OF ROUNDS REQUIRED TO MAKE HEXAGONS OR SQUARES

Distance Across Corners of
Hexagons and Squares



$d \times 1.1547 d$	$E \times 1.4142 d$				
d	D	E	d	D	E
$\frac{1}{4}$	0.2886	0.3535	$\frac{1}{4}$	2.0207	2.4708
$\frac{9}{32}$	0.3247	0.3977	$\frac{125}{32}$	2.0568	2.5190
$\frac{5}{16}$	0.3608	0.4419	$\frac{113}{16}$	2.0929	2.5632
$\frac{11}{32}$	0.3968	0.4861	$\frac{127}{32}$	2.1289	2.6074
$\frac{3}{8}$	0.4329	0.5303	$\frac{1}{4}$	2.1650	2.6516
$\frac{13}{32}$	0.4690	0.5745	$\frac{129}{32}$	2.2011	2.6958
$\frac{7}{16}$	0.5051	0.6187	$\frac{115}{16}$	2.2372	2.7400
$\frac{15}{32}$	0.5412	0.6629	$\frac{131}{32}$	2.2733	2.7842
$\frac{1}{2}$	0.5773	0.7071	2	2.3094	2.8284
$\frac{17}{32}$	0.6133	0.7513	$\frac{21}{32}$	2.3453	2.8726
$\frac{9}{16}$	0.6494	0.7955	$\frac{21}{16}$	2.3815	2.9168
$\frac{19}{32}$	0.6855	0.8397	$\frac{23}{32}$	2.4176	2.9610
$\frac{5}{8}$	0.7216	0.8839	$\frac{2}{4}$	2.4537	3.0052
$\frac{21}{32}$	0.7576	0.9281	$\frac{25}{32}$	2.4898	3.0494
$\frac{11}{16}$	0.7937	0.9723	$\frac{23}{16}$	2.5259	3.0936
$\frac{23}{32}$	0.8298	1.0164	$\frac{21}{4}$	2.5981	3.1820
$\frac{3}{4}$	0.8659	1.0606	$\frac{25}{16}$	2.6702	3.2703
$\frac{25}{32}$	0.9020	1.1048	$\frac{23}{8}$	2.7424	3.3587
$\frac{13}{16}$	0.9380	1.1490	$\frac{27}{16}$	2.8145	3.4471
$\frac{27}{32}$	0.9741	1.1932	$\frac{21}{2}$	2.8867	3.5355
$\frac{7}{8}$	1.0102	1.2374	$\frac{29}{16}$	2.9583	3.6239
$\frac{29}{32}$	1.0463	1.2816	$\frac{25}{8}$	3.0311	3.7123
$\frac{15}{16}$	1.0824	1.3258	$\frac{211}{16}$	3.1032	3.8007
$\frac{31}{32}$	1.1184	1.3700	$\frac{23}{4}$	3.1754	3.8891
1	1.1547	1.4142	$\frac{213}{16}$	3.2476	3.9794
$1\frac{1}{32}$	1.1907	1.4584	$\frac{27}{8}$	3.3197	4.0658
$1\frac{1}{16}$	1.2268	1.5026	$\frac{215}{16}$	3.3919	4.1542
$1\frac{3}{32}$	1.2629	1.5468	3	3.4641	4.2426
$1\frac{1}{8}$	1.2990	1.5910	$\frac{31}{16}$	3.5362	4.3310
$1\frac{5}{32}$	1.3351	1.6352	$\frac{3}{8}$	3.6084	4.4194
$1\frac{3}{16}$	1.3712	1.6793	$\frac{33}{16}$	3.6806	4.5078
$1\frac{7}{32}$	1.4073	1.7235	$\frac{3}{4}$	3.7527	4.5962
$1\frac{1}{4}$	1.4434	1.7677	$\frac{35}{16}$	3.8249	4.6846
$1\frac{9}{32}$	1.4794	1.8119	$\frac{3}{8}$	3.8971	4.7729
$1\frac{5}{16}$	1.5155	1.8561	$\frac{37}{16}$	3.9692	4.8613
$1\frac{11}{32}$	1.5516	1.9003	$\frac{3}{2}$	4.0414	4.9497
$1\frac{3}{8}$	1.5877	1.9445	$\frac{39}{16}$	4.1136	5.0381
$1\frac{13}{32}$	1.6238	1.9887	$\frac{3}{8}$	4.1857	5.1265
$1\frac{7}{16}$	1.6598	2.0329	$\frac{311}{16}$	4.2579	5.2149
$1\frac{15}{32}$	1.6959	2.0771	$\frac{3}{4}$	4.3301	5.3033
$1\frac{1}{2}$	1.7320	2.1213	$\frac{313}{16}$	4.4023	5.3917
$1\frac{17}{32}$	1.7681	2.1655	$\frac{3}{8}$	4.4744	5.4801
$1\frac{9}{16}$	1.8042	2.2097	$\frac{315}{16}$	4.5466	5.5684
$1\frac{19}{32}$	1.8403	2.2539	4	4.6188	5.6568
$1\frac{5}{8}$	1.8764	2.2981	$4\frac{1}{8}$	4.7631	5.8336
$1\frac{21}{32}$	1.9124	2.3423	$4\frac{1}{4}$	4.9074	6.0104
$1\frac{11}{16}$	1.9485	2.3865	$4\frac{3}{8}$	5.0518	6.1872
$1\frac{23}{32}$	1.9846	2.4306	$4\frac{1}{2}$	5.1961	6.3639

DATA

MISCELLANEOUS CONVERSION FACTORS

Metric and English

To Change From	To	Multiply By
FEET	METERS	0.3048
MILES	KILOMETERS	1.60935
METERS	INCHES	39.37
METERS	FEET	3.28083
KILOMETERS	MILES	0.62137
SQUARE FEET	SQUARE METERS	0.0929
SQUARE YARDS	SQUARE METERS	0.8361
SQUARE METERS	SQUARE YARDS	1.196
CUBIC YARDS	CUBIC METERS	0.7646
CUBIC METERS	CUBIC YARDS	1.308
FLUID OUNCES	CUBIC CENTIMETERS	29.574
QUARTS	LITERS	0.9464
CUBIC CENTIMETERS	FLUID OUNCES	0.0344
LITERS	QUARTS	1.0567
GRAINS	MILLIGRAMS	64.7989
POUNDS (AVOIRDUPOIS)	KILOGRAMS	0.4536
OUNCES (APOTHECARY)	GRAMS	31.1035
POUNDS (APOTHECARY)	KILOGRAMS	0.3732
GRAMS	GRAINS	15.4324
KILOGRAMS	POUNDS	2.2046
KILOWATTS	HORSE POWER	1.34
HORSE POWER	KILOWATTS	0.746
B. T. U.	CALORIES	252.0
CALORIES	B. T. U.	.003968
POUNDS	GRAMS	453.6
OUNCES (AV.)	GRAMS	28.35
INCHES	CENTIMETERS	2.54
INCHES	DECIMETERS	0.254
FEET	CENTIMETERS	30.48
FEET	DECIMETERS	3.048
SQUARE INCHES	SQUARE CENTIMETERS	6.452
SQUARE INCHES	SQUARE DECIMETERS	0.0645
SQUARE FEET	SQUARE CENTIMETERS	929.0
SQUARE FEET	SQUARE DECIMETERS	9.29
CUBIC INCHES	CUBIC CENTIMETERS	16.387
OUNCES PER SQ. FOOT	MILLIG. PER SQ.	
	DECIMETER	3050.
GRAMS PER SQ. IN.	MILLIG. PER SQ.	
PER HR.	DECIMETER PER DAY	360000.0
POUNDS PER SQ. FT.	MILLIG. PER SQ.	
PER YR.	DECIMETER PER DAY	133.8
GRAMS	POUNDS	0.002205
GRAMS	OUNCES (AV.)	0.03527
CENTIMETERS	INCHES	0.3937
DECIMETERS	INCHES	3.937
CENTIMETERS	FEET	0.03281
DECIMETERS	FEET	0.3281
SQUARE CENTIMETERS	SQUARE INCHES	0.1550
SQUARE DECIMETERS	SQUARE INCHES	15.50
SQUARE CENTIMETERS	SQUARE FEET	0.001076
SQUARE DECIMETERS	SQUARE FEET	0.1076
CUBIC CENTIMETERS	CUBIC INCHES	0.06102

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DATA

WEIGHTS AND MEASURES

Metric and English

LENGTH		
1 MIL	= .001	INCH
	= .025400	MILLIMETER
	= .0025400	CENTIMETER
1 INCH	= 1000	MILS
	= 25.400	MILLIMETERS
	= 2.5400	CENTIMETERS
1 FOOT	= 30.480	CENTIMETERS
	= .30480	METERS
1 YARD	= 91.440	CENTIMETERS
	= .9144	METER
1 MILE	= 1609.4	METERS
	= 1.6094	KILOMETERS
1 MILLIMETER	= 39.370	MILS
	= .039370	INCH
1 CENTIMETER	= .39370	INCH
	= .032808	FOOT
1 METER	= 39.370	INCHES
	= 3.2808	FEET
1 KILOMETER	= 3280.8	FEET
	= .62137	MILE

SURFACE		
1 CIRC. MIL	= .78540	SQ. MIL
	= .000001	CIRC. INCH
	= .00064516	CIRC. MILLIMETER
1 SQ. MIL	= 1.2732	CIRC. MILS
	= .000001	SQ. INCH
	= .00064516	SQ. MILLIMETER
1 CIRC. INCH	= 1000000	CIRC. MILS
	= 645.16	CIRC. MILLIMETERS
	= 6.4516	CIRC. CENTIMETERS
1 SQUARE INCH	= 1000000	SQ. MILS
	= 1273240	CIRC. MILS
	= 645.16	SQ. MILLIMETERS
	= 6.4516	SQ. CENTIMETERS
1 SQUARE FOOT	= 929.03	SQ. CENTIMETERS
1 CIRC. MILLIMETER	= 1550.0	CIRC. MILS

VOLUME		
1 CUBIC INCH	= 16.387	CUBIC CENTIMETERS
1 CUBIC FOOT	= 28317	CUBIC CENTIMETERS
1 CUBIC CENTIMETER	= .061023	CUBIC INCH
1 CUBIC INCH OF WATER	= .0361	POUNDS
1 CUBIC FOOT OF WATER	= 62.5	POUNDS

WEIGHT		
1 POUND (AVOIR.)	= 453.59	GRAMS
1 GRAM	= .0022046	POUND (AVOIR.)
1 KILOGRAM	= 2.2046	POUNDS (AVOIR.)

DATA

CONVERTING INCHES AND FRACTIONS OF AN INCH INTO DECIMALS OF A FOOT

	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"
0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	...
1/16	.0052	.0835	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385
1/8	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438
3/16	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490
1/4	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542
5/16	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594
3/8	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646
7/16	.0365	.1198	.2031	.2855	.3698	.4531	.5365	.6198	.7031	.7865	.8698
1/2	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750
9/16	.0469	.1302	.2135	.2969	.3802	.4635	.5469	.6302	.7135	.7969	.8802
5/8	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854
11/16	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906
3/4	.0625	.1458	.2294	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958
13/16	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010
7/8	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063
15/16	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115
											.9948

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INDUSTRIAL PRODUCTS

COMPARISON OF GAUGES

When Ordering Specify Thickness by Decimal Part of an Inch as Well as Name and Number of Gauge

Gauge No.	American or Brown & Sharpe	Birmingham or Stubs	Washburn & Moen	United States Standard (Revised)	United States Standard	Imperial S. W. G.
7/0	.....	.....	.490	.....	.500	.500
6/0	.5800	.....	.460	.....	.46875	.464
5/0	.5165	.....	.430	.....	.4375	.432
4/0	.4600	.454	.3938	.4063	.40625	.400
3/0	.4096	.425	.3625	.375	.375	.372
2/0	.3648	.380	.3310	.3438	.34375	.348
1/0	.3249	.340	.3065	.3125	.3125	.324
1	.2893	.300	.2830	.2813	.28125	.300
2	.2576	.284	.2625	.2656	.265625	.276
3	.2294	.259	.2437	.2391	.25	.252
4	.2043	.238	.2253	.2242	.234375	.232
5	.1819	.220	.2070	.2092	.21875	.212
6	.1620	.203	.1920	.1943	.203125	.192
7	.1443	.180	.1770	.1793	.1875	.176
8	.1285	.165	.1620	.1644	.171875	.160
9	.1144	.148	.1483	.1495	.15625	.144
10	.1019	.134	.1350	.1345	.140625	.128
11	.09074	.120	.1205	.1196	.125	.116
12	.08081	.109	.1055	.1046	.109375	.104
13	.07196	.095	.0915	.0897	.09375	.092
14	.06408	.083	.0800	.0747	.078125	.080
15	.05707	.072	.0720	.0673	.0703125	.072
16	.05082	.065	.0625	.0598	.0625	.064
17	.04526	.058	.0540	.0538	.05625	.056
18	.04030	.049	.0475	.0478	.05	.048
19	.03589	.042	.0410	.0418	.04375	.040
20	.03196	.035	.0348	.0359	.0375	.036
21	.02846	.032	.03175	.0329	.034375	.032
22	.02535	.028	.0286	.0299	.03125	.028
23	.02257	.025	.0258	.0269	.028125	.024
24	.02010	.022	.0230	.0239	.025	.022
25	.01790	.020	.0204	.0209	.021875	.020
26	.01594	.018	.0181	.0179	.01875	.018
27	.01420	.016	.0173	.0164	.0171875	.0164
28	.01264	.014	.0162	.0149	.015625	.0148
29	.01126	.013	.0150	.0135	.0140625	.0136
30	.01003	.012	.0140	.0120	.0125	.0124
31	.008928	.010	.0132	.0109	.0109375	.0116
32	.007950	.009	.0128	.0102	.01015625	.0108
33	.007080	.008	.0118	.0094	.009375	.0100
34	.006305	.007	.0104	.0086	.00859375	.0092
35	.005615	.005	.0095	.0078	.0078125	.0084
36	.00500	.004	.0090	.0070	.00703125	.0076
37	.0044530085006640625	.0068
38	.00396500800625	.0060
39	.00353100750052
40	.0031450070048

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DECIMAL AND MILLIMETER EQUIVALENTS OF INCH FRACTIONS

Fraction	Decimal	Millimeter	Fraction	Decimal	Millimeter
$\frac{1}{64}$	.0156	0.397	$\frac{33}{64}$	.5156	13.097
$\frac{1}{32}$	.0312	0.794	$\frac{17}{32}$	.5312	13.494
$\frac{3}{64}$	.0468	1.191	$\frac{35}{64}$	.5468	13.891
$\frac{1}{16}$	.0625	1.588	$\frac{9}{16}$	.5625	14.288
$\frac{5}{64}$	.0781	1.984	$\frac{37}{64}$	.5781	14.684
$\frac{3}{32}$	.0937	2.381	$\frac{19}{32}$	.5937	15.081
$\frac{7}{64}$	.1093	2.778	$\frac{39}{64}$	.6093	15.478
$\frac{1}{8}$	.1250	3.175	$\frac{5}{8}$	.6250	15.875
$\frac{9}{64}$	.1406	3.572	$\frac{41}{64}$	.6406	16.272
$\frac{5}{32}$	.1562	3.969	$\frac{21}{32}$	.6562	16.669
$\frac{11}{64}$	.1718	4.366	$\frac{43}{64}$	.6718	17.066
$\frac{3}{16}$	.1875	4.763	$\frac{11}{16}$	.6875	17.463
$\frac{13}{64}$	.2031	5.159	$\frac{45}{64}$	.7031	17.859
$\frac{7}{32}$	.2187	5.556	$\frac{23}{32}$	.7187	18.256
$\frac{15}{64}$	.2343	5.953	$\frac{47}{64}$	.7343	18.653
$\frac{1}{4}$	.2500	6.350	$\frac{3}{4}$	.7500	19.050
$\frac{17}{64}$	.2656	6.747	$\frac{49}{64}$	.7656	19.447
$\frac{9}{32}$	.2812	7.144	$\frac{25}{32}$	.7812	19.844
$\frac{19}{64}$	.2968	7.541	$\frac{51}{64}$	.7968	20.241
$\frac{5}{16}$	.3125	7.938	$\frac{13}{16}$	.8125	20.638
$\frac{21}{64}$	.3281	8.334	$\frac{53}{64}$	.8281	21.034
$\frac{11}{32}$	.3437	8.731	$\frac{27}{32}$	.8437	21.431
$\frac{23}{64}$	.3593	9.128	$\frac{55}{64}$	.8593	21.828
$\frac{3}{8}$	.3750	9.525	$\frac{7}{8}$	.8750	22.225
$\frac{25}{64}$	.3906	9.922	$\frac{57}{64}$	.8906	22.622
$\frac{13}{32}$	.4062	10.319	$\frac{29}{32}$	.9062	23.019
$\frac{27}{64}$	.4218	10.716	$\frac{59}{64}$	.9218	23.416
$\frac{7}{16}$	.4375	11.113	$\frac{15}{16}$	.9375	23.813
$\frac{29}{64}$	.4531	11.509	$\frac{61}{64}$	.9531	24.209
$\frac{15}{32}$.4687	11.906	$\frac{31}{32}$.9687	24.606
$\frac{31}{64}$.4843	12.303	$\frac{63}{64}$.9843	25.003
$\frac{1}{2}$.5000	12.700	1	1.0000	25.400

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